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Guest Editorial

Women in War Industries

THE present conflict has been defined as a global war. The fact is stressed that it involves not only the military forces but all men, women and children in civil life. Therefore no one is exempt from its effects and responsibilities, and an all out effort is essential for its proper and successful conclusion. To the old conception that the soldier wages the conflict there is added the man and the woman power behind the fighting lines to supply him in enormous quantity with the food and the weapons to accomplish his purposes. And woman finds herself a participant to an extent and to a degree never previously encountered.

Almost from the beginning of the war we have had brought to us by word and picture what the warring nations abroad have done to enlist women in varying capacities, as factory workers, nurses' aids, and in supplementary military and naval services.

And so in this country, emulating other examples, we have made strenuous efforts to impress women with the idea that knitting for the soldiers is an insufficient contribution, that they must be willing to assume other obligations which will release the available men from the factory bench and otherwise, for places in the fighting ranks. The propaganda apparently is successful if we are to judge by the statistics from the War Power Production Board. Women have been taken into the government bureaus in vast numbers to wield the typewriter, the filing cabinet, the card index machine and similar clerical apparatus. They have been organized into what may be designated as the supplementary combat forces, the Waacs, the Waves, the Red Cross and its many ramifications. For all these a woman may have her particular talents. But now she is being enlisted in other activities more directly concerned with defense and war material production to which are attached hazards and demands on strength and health quite in excess of those previously associated with the commoner forms of employment in which she has participated. Thus far it would appear that the labor of women has proved of value and if their induction into industry constitutes a part of the necessary effort to win the War, we should accept the decisions of our leaders. In doing so we must divorce from the movement any possible underlying element of glamour and purely financial stimulus and choose as participants those women whose entrance into industry would not disrupt their obligations to the family and to society as a whole.

Admittedly there are hazards in factory work which involve men less than they do women. Therefore the conditions for employment for the latter must be determined with great care. The ordinary requirements of general mental and physical soundness, as we might term them, must be supplemented by those involving her sexual sphere. Most healthy women are not greatly hampered by certain physiologic phenomena, such as

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menstruation, but there are others definitely incapacitated. If not under normal conditions of life, the strains and stresses of many factory jobs might readily serve to produce abnormalities in these functions. A resultant interference with their work might therefore be expected.

But, in addition to an unattached and otherwise free group of women available for war services, there are the mothers of small children and the prospective mothers, who are tempted to enter factories by the temptations of an increased income which are held out to them. While propaganda by some public officials have called for the enlistment of all classes of women, other governmental and private agencies have recognized the need for caution. Thus the Children's Bureau of the U. S. Department of Labor after a recent conference, has promulgated a statement dealing with standards for maternity care and employment of mothers in industry, the provisions of which are believed to be well within the reasonable performance of all employers. It shows however that women are in a different class from men in so far as their employment on a basis in which sex can be excluded.

In considering the question of responsibility toward the unborn child, are we to depart from the conception that this is a paramount function of woman, that every protection shall be accorded her during this period, that her possible contribution to the making of war materials is of less moment than that she bear successfully a child, without hazard to her or her offspring?

It should be possible to exempt pregnant women and the mothers of small children at least until we have exhausted the ranks of those not so involved. There is still an army of young women engaged in non-essential occupations, a multitude of "hostesses," beauty parlor attendants, models, vendors of amusements, among others, who might be more profitably employed if necessity calls for them. Let pregnant women and mothers of small children fulfill the function for which nature and civilized society has designated them. Motherhood may eventually prove more worth while than the making of bullets. Whatever the problems involved, they demand attention but their possible solution must depend on reasoned study and thought and not hysteria. Physically and mentally fit women, married or unmarried, and free from family ties should be found in our vast population in sufficient numbers to avoid a resort to the other groups in our expanded war program.

One of the essential and basic requirements of a successful State, in the larger sense, is the family unit. While this may be subjected by various agencies to influences that tend to its disintegration, these should be combated whenever it is possible to do so. This has been accomplished more or less successfully in normal civil life, though an all out war will disrupt necessarily many of its ideals. A mother, however, whether actual or prospective, should be regarded in other capacities than that of mere worker in the war effort. She presents a factor which is concerned with the future. Her progeny, particularly if this is in the dependent or in the formative stage, demands an evaluation equal to that which her manual labor at a hazardous occupation might attain. When this war is over, the toll of deaths and injuries among our male population may prove appalling, and our growing children must in the course of time supply the deficit in numbers. The birth rate of this country in recent years has grown. We may assume that this is due to a number of factors—a greater number of marriages stimulated by the war, and particularly among younger people, by an improved economic status and, we may hope, by better prenatal and obstetric care. The pregnancy wastage from miscarriages and induced abortions is probably about the same, although this is naturally a speculative figure. However it is to be hoped that the greater number of babies will compensate for the losss and invalidism among those young men who are participating

in the war. One can only repeat therefore that we must give our mothers adequate protection so that they can bear their children successfully, free from possible accidents and other complications which might attend hazardous occupations. If we urge upon them such employment, do we not endanger in a sense, their importance in the social scheme for which we have endavord to set up an ideal? Their mechanical achievements would appear of less importance than the disturbance in human values which would result from unreasoned action. The problem of maintaining human reproduction is a complex one, it demands careful study, uninfluenced by the glamour and excitement which naturally attend the effort for victory by every possible means.

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*EDITOR'S NOTE: Dr. Kosmak is President of the American Gynecological Society and also Editor of the *American Journal of Obstetrics and Gynecology.*

CARE OF THE TUBERCULOUS REJECTED FOR THE ARMED FORCES*

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The problem of tuberculosis control assumes additional importance with the dislocations of our social, economic, industrial, and public health structures brought about by war conditions. The relationship between war and tuberculosis mortality is a matter of historical record. We are familiar with the ravages of the disease in the war torn Europe of 1918, and there is reason to expect a similar condition resulting from the present conflict. The extent to which the influence will be felt in this country will depend upon the duration of the war and the degree of privation which occurs. As yet, we have no statistical evidence of an increase of the disease, but danger signs are already appearing.

We are confronted with problems of housing and over-crowded living conditions in most industrial areas. Thousands of workers and their families are living in makeshift quarters. Men and women are accepting jobs without adequate physical examinations and are without the necessary medical service to protect their health. This is particularly true in small plants. Industrial hazards have increased under the drive for maximum production. Factors of physical and mental fatigue are laying the groundwork of lowered resistance. The danger of contact infection is increasing. Civilian physicians are entering the military ranks in such numbers that medical service at home is being curtailed. In Pennsylvania, tuberculosis hospital facilities, always below normal needs, are inadequate to provide care for the inevitable increase in patients.

This is the situation with which we are faced today. If we hope to preserve the hard won gains, our tuberculosis control program must be stepped up in proportion to the general all-out war effort. Health departments, voluntary organizations, the medical profession, social agencies, industrial groups, and the lay public must extend their efforts beyond anything they have done in the past to maintain these gains.

Compared with the problem in 1917 and 1918, we have the advantage of a much lower death rate and the experience of twenty-five years of progress in scientific achievement. At the beginning of the war period in 1917 the tuberculosis mortality rate was 147 per 100,000 of population and by 1918 it had increased to 149 per 100,000 of population. Following the war there was a steady decline until today it is 42 per 100,000 of population. The present improved techniques for the diagnosis of tuberculosis now being used in the mobilization of our Armed Forces are shifting the responsibility from the Federal to the State government by eliminating men with tuberculous lesions before they are inducted.

In World War I physical examinations alone were used to determine the presence or absence of tuberculosis in the candidates for military service. This method is one which we know lends itself to a high percentage of error even when done by an experienced physician. As a result, thousands of

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men were accepted for military service with unrecognized lesions in their lungs which flared into active disease at a later time. How much of this activation was due to military service cannot be determined. However, they have been cared for by a generous government which is still paying the bill twenty-five years later. The Federal Government has already spent in excess of $960,000,000 in hospitalization, compensation, and insurance for these men. We have no means of estimating what percentage of this group would have become responsibilities of the State had they retained their civilian status. Probably the number would have been large, and perhaps that particular group of men was fortunate to have become wards of the Federal Government.

Today military physicians have the advantage of twenty-five years of experience in tuberculosis diagnosis. They do not depend on physical examination alone but are using the far more efficient method of rapid chest roentgenography. Speed and accuracy, both important factors, are provided by improved technical equipment and better trained personnel. The government has set a high standard of disqualifying pathology in its determined effort to keep tuberculosis at a minimum in the Armed Forces. On this basis many men may be unfairly disqualified, but such errors are certainly on the side of safety. Those who have disqualifying pathology are returned to civilian life where they become the responsibility of the local health authorities.

As means of early diagnosis, chest roentgenography has already proved the existence of a large amount of unrecognized pathology in the military age group where physical disability should be at a minimum. As a result of this, tremendous impetus has been given to this diagnostic procedure in case finding. If, on the basis of their past experience, the military authorities now consider it economical to make routine chest x-rays of all men, is it not worth while to think in terms of the same method for use in civilian groups? Certainly no less attention should be given the civilian groups for the benefit of our war effort. The value, however, of finding active cases and those with potentially dangerous disease is limited unless we are prepared to provide proper treatment for the sick and adequate medical supervision for the potentially sick.

During normal times our facilities for both diagnosis and treatment are taxed to the utmost. With this intensified case finding program brought into operation by the war effort, are we prepared as a State to meet the additional burden? It is quite obvious that in order to do so we must have facilities beyond those that exist today. It is going to cost money and lots of money. This fact cannot be escaped, and the more we temporize the greater the cost and the longer we must endure the treadmill of continued spread of the disease. We look to the State Health Department for leadership, realizing their limitations if an inadequate budget for their use is provided by the appropriating bodies. Unless an adequate budget is provided, there is danger of the tuberculosis program bogging down at one of the most critical times in our history.

Last year the people of Pennsylvania contributed $700,000 for the use of the Pennsylvania Tuberculosis Society and its affiliated organizations. This sum represents $79,000 in excess of any amount previously raised in the State and was given voluntarily by many thousands of individuals. It should serve our legislators as a gauge of the taxpayers' reaction to increased appropriations for tuberculosis work.

Experience of the past thirty-five years has molded the pattern of an effective tuberculosis program. We must continue along these lines until more efficient methods are found even though the path seems circuitous. Education is the keystone. Education embraces a broad field and must constantly devise ways and means of spreading health information to the masses. Education must reach all ages and races, both the rich and the poor. Education must include special training for physicians, medical students, health officers, nurses, and social workers. Education must be dynamic or its effectiveness is soon lost.

Today special emphasis should be placed on education in industry. Management must be convinced of the need to protect their workers from the lurking danger of tuberculosis. They must be sold the idea of the economy of an organization free from the disease. They should know the value of recognized methods of prevention. The employees should know these facts in order to demand adequate protection. Knowledge about health conservation can do a great deal to protect the individual and keep the wheels of industry rolling to capacity.

The very fact that the Selective Service Boards in Pennsylvania have already rejected over 5,000 apparently healthy young men for military service because of demonstrable tuberculosis is convincing evidence that something is wrong with our civilian case finding program. Medical practice has followed the conservative idea of waiting until a patient becomes sufficiently ill to seek advice. In tuberculosis this can only lead to grief, for by the time symptoms appear the disease has passed the optimum time for treatment. The medical profession as well as the public must be educated to the value of routine chest x-rays of the apparently healthy if early recognition of the disease is to be accomplished. The tuberculin testing of school children and college students with x-rays of the positive reactors has been of great educational value. As a case finding procedure *per se* it has limitations because of the ages involved. Group examination of adults by means of chest x-rays of the apparently healthy is somewhat radical and for that reason has met with some opposition from organized medicine. The value of the method has not been seriously questioned by the profession, but objections have been made as to the *modus operandi.*

Fundamentally it must be remembered that tuberculosis is a communicable disease and as such is a public health problem as well as a matter of the individual's health. In fact, the very crux of the problem is to find the infectious patient and then break the contact between the sick and the well. If this one point is kept in mind, our efforts cannot go astray. Ways and means of providing x-rays have been the subject of considerable controversy because of economic questions. Tuberculosis is a killer in our midst and we must not quibble about the method of exterminating him. We might just as well quibble about the cost of anti-aircraft shells when bombs are dropping from enemy planes.

Tuberculosis has been a scourge of the human race so long that it is more or less accepted as one of the evils which we must endure. Its insidiousness and unspectacular behavior also contribute to a general feeling of indifference. We have become so hardened to the loss of 60,000 lives it takes each year in the United States that we forget every one of them might have been prevented. We are all familiar with the excitement and hysteria that occur when an epidemic of infantile paralysis is reported. The number of cases may be relatively small and yet it immediately becomes headline news. The public demands action, and precautionary measures to prevent its spread receive energetic attention. This is, of course, as it should be, but why the difference in attitude toward tuberculosis—also a communicable disease, also crippling children and young adults, and year after year taking a greater toll of lives between the ages of 15 and 45 years than any other disease? If we are sure of anything in the future, we can say with certainty that during the next year and the next and the next, Pennsylvania will lose approximately 4,000 persons from tuberculosis, most of them in the productive period of their lives, and many thousands more will be permanently crippled so that they must exist at the expense of the community. Aside from the humanitarian aspect, it is not good business or common sense. It is waste of the most expensive kind at a time when the conservation of manpower means more than at any time in our history.

In our present need for manpower we are confronted with the necessity of applying with vigor the principles of tuberculosis control developed over a period of thirty-five years. The Selective Service Boards have already placed in our hands over 5,000 young men they consider to be unfit for military service because of the presence of tuberculosis. Many of them are quite capable of continuing in some effective civilian pursuit, some need rehabilitation for work which suits their physical capacity, and some need treatment. They are confused, disappointed, and frightened. To most of them the diagnosis of tuberculosis came as a surprise and a distinct mental shock. In reality, however, they are more fortunate than those who have not had the benefit of a similar type of physical examination. Their infection has been recognized at a time when, for most of them, something can be done about it. But what will be done about it?

Under the present system they are reported to the State Health Department and referred to their family physicians or tuberculosis clinics for further observation and treatment. The physicians of the Selective Service Boards have neither the time nor the facilities to do more than inform these men of the reason for their disqualification. From a medical standpoint the rejectees fall into three groups. The first group includes those who have minimal

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healed disease, probably not of clinical signficance but of a degree not acceptable to the army. In most instances they can quite safely return to their regular occupations. They do require some observation, but what is more important they are entitled to a careful explanation of their condition. To most of them the diagnosis of tuberculosis on their rejection papers means something to be feared. They cannot differentiate between primary infection, reactivation disease, and the numerous other diagnostic nomenclature which have been used. In their minds they have consumption. Unless this fear is dispelled, we are going to have a large number of anxiety states which will require further medical attention. An unqualified diagnosis of tuberculosis in these cases is unfair to the individual and may interfere with future employment, embarrass him in his social contacts, or prevent his taking out life insurance. We have seen a fair number of this type, and in some instances our best efforts have so far failed to nullify the mental shock of the rejection diagnosis.

The second group is made up of those men who have demonstrable disease of undetermined stability. They require careful medical observation. Some need a preliminary period of hospital study, but most of them can continue at home under the guidance of their own physician or of a tuberculosis clinic. In many cases it is a question of establishing their work tolerance. A change of job may be necessary or perhaps retraining through the rehabilitation service will keep them safe and self-supporting. Prolonged medical and social follow-up will protect their future and prevent a great deal of expensive hospital treatment.

The third group comprises the cases with definitely active disease. Except for the comparative few who can be treated at home, they should be admitted to hospitals immediately for their chance of recovery depends upon the availability of adequate treatment facilities. Their isolation is necessary for the protection of those with whom they are in contact.

We must look forward to the next few years with considerable concern. The duration of the war is problematical, the extent of future social and economic disruption is uncertain. There is little doubt, however, that tuberculosis will be adversely influenced by the duration of the war and the degree of the attending dislocations. To cope with the emergency will require a supreme effort from all those directly or indirectly concerned with the problem. The need for additional clinic facilities, more hospital beds for tuberculous patients, and an augmented nursing and social service is essential. To insure these, an adequate budget for the Health Department is imperative. The practicing physician must be tuberculosis conscious and tuberculosis wise. The voluntary organizations must streamline their programs to meet the emergency. Their facilities should be used by official workers and practicing physicians in every way possible. Finally, the degree of success which we achieve will depend upon the full understanding of the danger ahead, sufficient funds to carry on the work, and a cooperative effort to meet the situation.

Tuberculosis League of Pittsburgh.

A FURTHER REPORT ON THE USE OF RADIUM IN THE BENIGN CONDITIONS CAUSING UTERINE BLEEDING*

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In practically all of the diseases and disorders of the uterus, abnormal uterine bleeding is the one symptom that drives the patient to the physician. Too much, too often, too uncertainly, a little all the time, this is the clinical picture, the chief complaint. There is no remedy for bleeding. If everybody including our own profession could learn this fact, we would be a long way upon the road to Utopia.

There is always a cause for abnormal bleeding but you have got to look for it to find it. When the cause has been discovered there are many ways and means of removing it, so that the bleeding can be stopped and the anemia either forestalled or cor-

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rected. If we eliminate cancer, certain acute infections of the tubes, tumors of the ovaries, and abnormal puerperal conditions, we have left five well defined conditions that cover the field as causes of abnormal uterine bleeding. They are as follows: 1. Myopathic bleeding in young girls and spinsters. 2. Endometritis. 3. Fibroid uterus. 4. Fibroid tumors of the uterus. 5. Relaxed subinvoluted uterus.

In my paper read in Staunton before this Society on October 14, 1936, I reported 250 cases. I now wish to add 125 more cases, making a total of 375. Let us take up each under its heading.

Myopathic bleeding in young girls and spinsters is a clinical entity, fortunately rare, with a pathology as vague as its ingenious title would suggest. I have had but three such cases. These cases should be relieved by glandular therapy for their trouble resembles more a functional disorder than a structural change.

In a case in which I was consulted, a prompt relief was had from pituitary extract. I reported a case of a girl of 14 whose hemoglobin dropped to 20, completely and permanently relieved by curettement and packing with apinol. This clinical triumph was nullified completely by subsequent events to which certain of her associates of the opposite sex would bear lugubrious testimony. Then I reported a spinster—whatever that term may mean—in whom after many curettements I used 800 mg. hrs. of radium. She stopped for a year, dropped or shed her spinsterhood, married, and had a strong healthy child. Polak reports a number of such cases, some with similar gratifying results.

I have recently had a fourth case, too recent to claim a cure. She was 16, had been bleeding irregularly and oozing and spotting over a period of months. All the established remedies and all the older and newer endocrines and hormones, real and their synthetic analogies, as well as several curettements had failed to relieve her. I gave her 600 mg. hrs. of radium. This, if it follows former patterns, should stop her for about a year when she should begin to menstruate normally. The cervix and uterus were relaxed and atonic. The uterus, though small, was as flabby as its larger counterpart might be after delivery. Some day we shall learn enough to treat these cases less drastically. For the present in radium we have at least something to stand between them and hysterectomy, a fate that eventually overtook not a few who could not be relieved by any treatment then known.

Endometritis. (a) Proliferative, formerly called hypertrophic glandular endometritis. (b) Polypoid endometritis. Again we have a vague title meaning an inflammatory process when we wish to designate two slightly varying forms of hyperplasia of the endometrium. It is essentially a highly vascular thickening of the endometrium. It occurs from the early thirties to the late forties. If gotten early many of these cases yield to currettement.

When curetting, the membrane often is seen floating out of the os in large sheets, giving the appearance of the membrane of an early pregnancy. In the older women of this group we usually find the hard, unyielding, grating feeling imparted to the curette so characteristic of the fibroid uterus. Before the advent of irradiation many of these cases after repeated curettements had hysterectomies done as the last alternative.

Our combined series shows 104 of this class of cases.

The fibroid uterus. This is so clear-cut a clinical picture that one wonders why we hear of it and read about it so seldom. Its pathology consists of marked fibroid changes in the organ. One thinks of a clover field that has been dispossessed by broom straw until it is no longer a clover field at all. The uterine cavity is wide and deep, its walls hard, stiff and unyielding. A thick endometrium may cover its hard surface but oftener the mucosa is scant. Curettements and packings and medications do little good. Curettement followed by about 1800 mg. hrs. of radium usually stops all bleeding. It is the benign alternative to hysterectomy.

Our records show 153 such cases.

Fibroid tumors. I think most of us are operating on more tumor cases and irradiating fewer as the years pass, and experience points the way. We did not at first realize that a tumor that did not bleed any longer might still give great discomfort from pressure, and so all of us are discriminating a little more carefully. In women in whom the retention of the ovarian function is a real or sentimental factor, we operate. Large tumors, multinodular tumors, tumors accompanied by cystic ovaries or tubal disease are surgical. The ideal growth is

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a globular growth the size of a grapefruit in a woman in her early forties. In large fibroids with dangerous anemia it is an invaluable adjunct to surgery, for, by stopping the bleeding a hazardous case may be made safely operable. Again, women with diabetes, heart disease or very high blood pressure may be made far more comfortable and have their lives prolonged, for they are denied the alternative of operation.

Our records show 98 cases in this group.

The relaxed subinvoluted uterus is an organ of many conceptions and not a few deliveries with inadequate periods of rest between times, large, indolent, relaxed, as though it hesitated between the normal and the gravid states, and wept blood over its mistreatment and neglect. Here we have a large, boggy organ, usually lying in the culdesac from its own weight and flaccidity. Its os is open. It is pale or yellowish in color. It bleeds a little almost all the time. There is usually a thick vascular endometrium secondary to the stasis and congestion. Since these women are usually older and usually poor they are curetted and given the larger dose, 1800 to 2000 mg. hrs., to restore them to a normal life again as quickly as possible.

We have 17 of this group.

In all of the 375 cases there has been no mortality, not one single death. We have had two or three severe reactions where some latent infection was fanned into flame. It is not a pretty picture and one does not wish to look upon it again. The uterus increases in size until it rises out of the pelvis, the broad ligaments are thickened, the temperature rises, and there is pain and marked general pelvic tenderness. In two cases it all subsided, and the third developed an abscess that emptied into the vagina. She is well today, but I grew a little grayer in the interim. She was a rather close personal friend.

I am so often asked, "What is the dose of radium?" It depends first on your patient and what you are trying to accomplish. In the young girl, you are trying to stop her periods temporarily to give tone to her uterine function and to damage her ovaries as little as possible while so doing, so your dose is relatively small—3, 6, or 800 mg. hrs. In women still in the menstrual age you may have the same object in view, to stop her flooding with a hope of her resuming her normal function later on. This result is not infrequently achieved. At worst you have only to repeat the treatment and this is far better than over treatment in too big an initial dose.

It takes a larger dose to stop flooding than bleeding. Flooding is an augmentation of the cycle of menstruation. You have to break the mechanism of the ovarian-uterine combination as well as to shrink the uterus by contracting it and diminishing its blood supply. In bleeding — and by this I mean that in which the ovarian function plays no part, it having been relegated to the limbo by nature in her autumnal disguise called the menopause—it is easier to stop an old woman's periods, or flooding, than it is to accomplish the same purpose in a young woman. It would be far easier to drown an old woman than a child. Young organs and functions are vital and tend to persist and survive. It takes far less radium to push an old woman over the line than would be required for her younger sister.

I have said nothing about x-ray because this paper, as its title implies, is not on that subject but on radium. X-ray could be substituted for many of these cases with the full expectation of equally gratifying results. But I am convinced that the curettement and biopsy which is a part of the routine in every radium case is of the greatest importance in establishing correct diagnosis in all of these cases. I picked up two cases of fairly early cancer of the body of the uterus in the past three months just by following this routine. Had they been given x-ray or radium without the curettement I fear that both would have missed something to which they were fairly entitled.

In as much as I discussed the after-care of these patients rather thoroughly in my previous paper I shall touch on but one aspect of it here. What is to be done about the nervous phenomena of the menopause, those hot steams and flushes, and cold sweats? I would say that the first thing to do is to see whether the patient is going to have such symptoms before beginning to treat her. Many women escape them in the natural menopause and many will escape them in the artificial counterpart, if left alone. In a woman whose uterus has been removed, theelin and its equivalents may be most helpful. In an older woman they may be helpful after radium. In the younger woman injudicious

use of these agents may bring on the very bleeding again which we are trying so hard to stop. The bromides and kindred sedatives sustained many generations of her ancestors, why not her too?

And while upon this subject may I say that these same estrogens or hormones are sometimes given to women with arrested cancers. Suppose it does stop her hot flushes. Does anybody really know what it may do to the cancer? Have we a right to give anything until we do know? Is it wise to stir the embers and blow on the ashes of a burnt dwelling as soon as the fire engine is back in its station?

Oh menopause, oh change of life, the crimes of omission and commission that are perpetrated in thy name!

DISCUSSION

DR. ALFRED P. JONES, Roanoke: Anyone who undertakes to discuss a paper of Dr. Peple's is at once confronted with two major difficulties. In the first place, very few men can equal his command of the English language; and, in the second place, it is difficult to disagree with his conclusions.

It is becoming increasingly evident that the consensus of opinion is that the field of radium in the treatment of uterine conditions has very definite limitations.

To begin with, it is recognized that the control of uterine bleeding by radium depends upon the effect of the radium on the ovaries and not on the uterus itself. We must, therefore, be willing to consider putting the ovaries out of commission at least temporarily whenever we resort to the use of radium.

This means, then, that in the treatment of excessive bleeding due to fibroids in the younger woman hysterectomy is a more conservative procedure than the use of radium, because one or both ovaries can be conserved.

For the treatment of the menorrhagia of the menopause, radium is definitely the method of choice.

Dr. Peple mentioned the occasional case of the very young girl with intractable bleeding when no tumor is present. I have seen two such cases, both of whom had bled white in spite of numerous currettements and whose bleeding was controlled by a dose of radium sufficient to stop the periods for nine to twelve months.

In both of these cases the periods returned normally.

Dr. Peple did not mention the danger of the application of radium in the presence of pedunculated submucous myomata, but I know he is well aware of this contraindication to its use.

It has been a great pleasure to hear this communication, as it is always a privilege to listen to any paper of Dr. Peple's, and I heartily agree with his ideas on the subject.

DR. JULIAN L. RAWLS, Norfolk: For nearly forty years I have been listening with a great deal of pleasure and profit to the various papers that Dr. Peple has favored us with and this morning has been no exception to that statement.

There are one or two things in his paper that I would like to emphasize. First, I would like to say something about the young girls with excessive menstrual bleeding. They are always quite a problem. If it were possible to pick out from the triad of endocrines which govern menstruation the one which is at fault, it might be possible to simply give the proper endocrine, then the problem would be solved. Sometimes the physical appearance of the girl helps us in this.

Radium certainly should be used guardedly, 300, 400, 600, never more than 800 mgm. hours. One thing that should be remembered if radium is used and a pregnancy occurs within a year, there is a possibility that the baby may be physically or mentally defective. Such stress has been laid on this by Cutler and others that I do not hesitate to tell these young women that if a pregnancy should occur, within the first year, I will abort them.

Another group of women with metrorrhagia has been somewhat of a problem to me. These are the women between 35 and 45 years with firm, hard uteri, with no definite nodules. The uterus is slightly enlarged and very little endometrial scrapings are obtained. They are radium resistant and if sufficient irradiation is used to relieve the condition practically all ovarian function will be destroyed. I believe that under 40 years a supravaginal hysterectomy is preferable. Beyond 40 years we do not have so much hesitation in destroying ovarian function. However, sometimes radium does not relieve the bleeding and they have to eventually submit to a hysterectomy.

I have just had a rather unusual accident following radium. We had a woman of 52 years with excessive bleeding who had never passed her menopause. We placed two capsules in tandem containing a total of 50 mgm. of radium in the uterine cavity. In that set-up there is not much more than 12½ mgm. at any one point. The screening was 1 mm. of platinum and a rubber filter. She received a total of 2,550 mgm. hours. Four months later she had what we thought was a hemorrhage from the uterine artery. Packing did not control it at all. A hysterectomy was done and it showed that she had a vesico-uterine fistula and what we had taken for blood was urine mixed with blood. She had been voiding normally.

I want to express again my appreciation of Dr. Peple's paper and my pleasure in listening to it.

DR. PEPLE, in closing: In the first place I wish to thank Drs. Jones and Rawls for their very kind discussion and lenient criticism of my paper.

Replying to Dr. Jones' question about the pedunculated submucous fibroids, I would state that I dealt more fully with such questions in my first paper to which this is a second section, largely to report additional cases. I think we are entirely agreed on all points under discussion.

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Now, regarding the case reported by Dr. Rawls, I have never had a fistula following application of radium except in malignancy. It is not uncommon to get fistulae both into the rectum and into the bladder. I have one patient at this time, perfectly cured of her cancer with both a urinary and a fecal fistula into the uterus. She passes both out through the cervix instead of through the urethra and the rectum. I cannot explain the very unusual behavior of the radium in this case.

In conclusion, I will say it is always a pleasure to be in Roanoke, where there are located so many of my old pupils and old friends.

EPIDEMIOLOGIC STUDIES IN SYPHILIS*

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The importance of epidemiologic work in reducing the incidence of syphilis is increasingly recognized. It is known that transmission of the disease occurs most often during the early or "acute" phases. The primary lesion or chancre is teeming with S. pallida which can easily be passed to another person. Likewise, the comparatively moist cutaneous lesions, mucous patches and condylomata of secondary syphilis are dangerous, as are the lesions of mucocutaneous relapse and recurrence. These recurrent lesions occur most frequently during the stage of early latency, and as the duration of syphilis increases, the frequency of recurrent secondaries decreases.

Hudelo and Rabut,[1] discussing recurrent infectious lesions in syphilis, describe a series of cases showing a preponderance of such incidents in the first two years after infection. The Cooperative Clinical Group[2] reported 84 per cent of mucocutaneous relapse occurring in the first two years of infection. Stokes, Besancon and Schoch[3] found 93 per cent of relapses within two years following the onset of syphilis. Vedder[4] quoted Tschistjakow "on the length of the condylomatous secondary period", based on 1,000 collected cases. In this group, the last condylomatous lesions developed within the first five years in more than 80 per cent of cases.

It appears that the infectiousness of syphilis closely parallels the recurrence of admittedly infectious lesions. This infectiousness is most marked in the early stages, in the first two or three years after onset, diminishing as the years pass. Fournier,[5] as early as 1880, recognized this fact. Vedder,[4] quoting Fournier's figures concerning duration of infection in 142 men at the time they infected their wives, showed that syphilis is most likely to be transmitted during the first two or three years after onset. O'Leary and Williams[6] observed that when one marital partner was infected less than a year before marriage, both husband and wife were infected in 83 per cent of families. If one was infected less than two years previously, both were infected in 33 per cent, and if infection had occurred less than five years before marriage, both partners were infected in 25 per cent of families. Stokes[7] cites Keyes' statistics on infectiousness concerning syphilitic persons who married and took no precautions against infecting their partners. During the first year the chances of infecting the partners were 12 to 1; during the second year, 5 to 2; in the third year, 1 to 4; and "all but nothing" thereafter. Concerning Keyes' statistics, Pusey[8] states: "These findings belong to the prearsphenamine and pre-Wassermann days. Modern statistics show a higher number of relapses."

Morgan,[9] in a review of the question of accidental transmission of syphilis by transfusion, concluded that *incontestable* reported cases showed the source of infection to be in the early or "acute" stage, or the transmissibility of the disease to be influenced by pregnancy. McNamara,[10] discussing this same subject, reported the use of people with late syphilis as donors for emergency transfusions, without apparent resultant infection.

Experimental workers and authorities on the subject[11, 12, 13, 14, 15, 16, 17] have shown that the body secretions and fluids (here are included seminal fluid, prostatic fluid, saliva, urine, milk, blood, and cerebrospinal fluid) harbour S. pallida more frequently in early than in late syphilis, especially during the early "acute" or eruptive stages. It seems

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probable that such secretions as saliva and urine may not contain the organism unless contaminated from mucocutaneous lesions.[16, 17] Sweat might possibly come under this category.

The foregoing emphasize the fact that syphilis is *much more transmissible* during the *first stages and early years*. Therefore, in any effort to reduce the incidence of syphilis through epidemiologic methods, it is found that concentration on *early cases* will bring the best results in proportion to the time spent. For practical purposes, we can limit the sexual partners of a patient with primary syphilis to those since a period of 90 days prior to the appearance of the chancre. This may be accepted as the longest possible incubation period. In the case of a patient having secondary syphilis, the inquiries would necessarily have to cover a longer period. When the patient has early latent syphilis, and the date of appearance of the chancre can be determined as not more than one year prior to diagnosis, it is found beneficial to include his contacts in an intensive study. This type of epidemiologic study requires patience and diligence, but has proved to be of great public health benefit.

There has, in the past, been much hesitancy on the part of physicians to delve into this very interesting side of preventive medicine. This can be understood because of the nature of transmission of syphilis. One feels hesitant to inquire into the private lives of other individuals; or the patient is at first reluctant to divulge such personal information. However, the necessary information may easily be obtained by tactful approach in the right manner.

For many years it has been routine procedure to carry out thorough epidemiologic studies on all cases of early syphilis entering the University of Virginia Hospital or Clinic. These studies often reveal the source case as well as other individuals who have been infected by the informant patient. The subject of contacts is never brought up at once—maybe not during the first visit. This is done only after carefully educating the patient as to the nature of syphilis, its dangers to those suffering from it, and the potential danger to those not yet infected. After this, the subject of possible sources and secondarily infected individuals will often be broached by the patient. The attempt is then made to obtain the names, addresses, and descriptions of all sexual partners of the patient within the indicated period of time. Since the source case infected the patient, this individual may still be a danger to others. Anyone with whom the patient has consorted since becoming infected may also have been infected and may now be a source of danger to others. It must be emphasized that the patient's identity will never be mentioned or disclosed in follow-up of the contacts.

There are several means of approaching these contacts. Occasionally, the patient will grasp the public health aspects of the situation and send or bring his (or her) contacts for examination. Letters on departmental stationery, informing the contacts that they are known to have been exposed to a serious contagious disease and that they may have become infected, will often bring them in for examination. If the contact's family physician is known, he may be informed of the circumstances and be able to have the contact examined with little difficulty. Personal visits to contacts may be made by the physician, a nurse, or the health officer. Any one or more of these different methods may be used, according to the circumstances of each case. Discussions of important aspects of this epidemiologic method have already been published.[18, 19, 20, 21] Clark[22] has recently reported further successes in similar work.

If epidemiologic work is confined to early cases, the additional number of persons with syphilis thus brought to examination and treatment will contain a high percentage of individuals with early infectious syphilis. *Concentration* of efforts toward *locating such cases and getting them under treatment* will prevent many other infections. A gradual decline in the morbidity rate of syphilis should thus be achieved.

REPORT OF CASES

During the period from September 1, 1938, to March 1, 1940, 66 cases of early syphilis seen in the University of Virginia Hospital and Clinic named a total of 157 contacts. These represented 147 individuals, of whom 102 were brought to examination. Of the 45 on whom no information was obtained, the majority lived at such a distance that reliance on correspondence was the only available means of getting the facts. When these contacts failed to respond, and we could not get a nearby physician or health officer to supply us with

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needed facts, our efforts were necessarily counted as failures. Several of the contacts were strangers to our informants, and lack of information as to name or address prevented us from following them up. Of the 66 cases studied, 29 furnished information adequate for us to determine the source of infection in our original patient. While this is a small series of cases, the figures shown in Table I agree with the fact that syphilis is most infectious during the early stages.

With statistics such as these, we must be mindful of the possibilities of error: the fallibility of human memory, the tendency to keep secret extramarital exposures, the possible absence of early symptoms or the presence of pregnancy to delay them and alter the picture of syphilis. We can only sift the evidence in each case and include as of value those in which the facts can be scientifically accepted.

Table I shows duration of infection in the source cases at the time of infecting our original patients.

TABLE I

DURATION OF INFECTION	NUMBER OF CASES
Less than 6 months	19
6 months to 1 year	4
1 year to 18 months	3
2 years	1
4 years	1
6 years	1

This number of early cases of syphilis over a period of 19 months is quite small for a large clinic; but during the past 20 years, this clinic has conducted an intensive anti-syphilitic campaign in the immediate and accessible surrounding territory. This has been done not only through therapy, but through educational and epidemiologic activity. As a result, it must be deduced that the local incidence of syphilis has been lessened. It is of note that several "local" early cases acquired their infections at distant places and returned here for diagnosis and treatment. A number of additional cases undoubtedly went to private physicians. Also, beginning in September, 1938, there was an intensive syphilis survey of Charlottesville and Albemarle County, Virginia. This survey was carried out under the United States Public Health Service, the Virginia State Department of Health, and the University of Virginia Department of Syphilology and Dermatology. The survey maintained additional clinics in Charlottesville and Albemarle County, under the supervision of a member of the Public Health Service. A few early cases of syphilis were cared for in these outside clinics and therefore were not included in this study of Hospital clinic cases.

Table II shows the determination of possible source cases and exposed individuals, with their subsequent admissions for observation, and treatment if needed. In the event that these contacts lived far from the clinic, definite statements from their physicians were required before they were considered as having been examined. Through personal letters, personal visits, correspondence with physicians, and through help from State Health Departments, we were able to ascertain that more than 50 per cent of contacts living outside the county were examined (either here or elsewhere).

Table III shows the distribution of these individuals, divided into local (city and county), state, or out-of-state, with the numbers subsequently under observation.

Table IV shows a similar division of these individuals, with the methods used to place these people under observation and to determine their status from the standpoint of infection.

Table V shows the number of contacts named per case, the number examined, the number and per cent infected, and the estimated number of contacts

TABLE II

DISCOVERY OF EXPOSED PERSONS THROUGH QUESTIONING OF ORIGINAL CASE AND ADMISSION TO THE CLINIC CONSEQUENT UPON FOLLOW-UP

	Original Cases	CONTACTS							
		Named	Individuals Represented	Consequent Admissions					
				Voluntary		Follow-Up		Total	
				No.	%	No.	%	No.	%
White	23	50	48	2	4.1	35	73.0	37	77.1
Colored	43	107	99	28	28.3	37	37.3	65	65.6
Total	66	157	147	30	20.4	72	49.0	102	69.4

infected, with the estimated number of infected individuals for each original case.

It will be seen that this program resulted in the discovery of 62 additional cases of syphilis. All were placed under treatment, thus eliminating many potential foci for spread of the disease. The majority of these discovered cases were in the primary or secondary stage or had syphilis of less than one year duration when brought to examination. Of the 29 which were established as sources of infection in our original informant patients, 19 had syphilis of less than six months' duration (Table I). Even the source case whose duration was six years was found to have infectious lesions of mucocutaneous relapse, darkfield-positive, when examined. (Diagnosis of this man's infection had been made at the time of his primary lesion. However, after comparatively few treatments, he had moved away and all efforts to locate him had failed. He had received no further specific therapy).

TABLE III
INDIVIDUALS NAMED AS CONTACTS DIVIDED ACCORDING TO LOCALITY, WITH OUTCOME OF EFFORTS TO GET THEM UNDER OBSERVATION

	Individuals Named	Individuals Examined		Individuals Missed
Local	78	64	(82%)	14
State	57	30	(52.6%)	27
Out-of-State	12	8	(66.6%)	4
Total	147	102	(69.4%)	45

If cases of early syphilis are put under regular, intensive treatment, mucocutaneous relapse will hardly ever occur while treatment is continued. Furthermore, it is known that the earlier treatment is begun the better chance there is of cure. As a result of a physician discovering syphilis in the early stages and instituting prompt, adequate, and prolonged treatment, these cases will be rendered non-infectious for all practical purposes. The resulting increase in early treatment of syphilis will also bring about more cures, fewer fatalities, and fewer late debilitating stages requiring support by

TABLE IV
METHODS USED IN OBTAINING EXAMINATION OF INDIVIDUALS NAMED, WITH FREQUENCY OF SUCCESS OF EACH ACCORDING TO LOCALITY

	Local	State	Out-of-State	Total
Voluntary	24	6	0	30
Personal Letters	23	8	0	31
Personal Visits	15	9	0	24
Letters to Physicians	0	4	2	6
Brought in by Informant	2	1	1	4
State Health Departments	0	2	5	7
Total	64	30	8	102

TABLE V
NUMBER OF EXPOSED CONTACTS, NUMBER INFECTED, PERCENTAGE INFECTED, AND ESTIMATED NUMBER AND PERCENTAGE INFECTED

	Original Cases	Exposed Contacts						
		Total Number	Number per Case	Admitted or Studied Elsewhere			Estimated	
				Total Number	Number Found Infected	Per Cent Infected	Total Number Infected	Number Infected per Case
White	23	48	2.08	37	20	54.0	26	1.13
Colored	43	99	2.30	65	42	64.6	64	1.49
Total	66	147	2.23	102	62	60.8	90	1.36

the public. This aspect alone will be a financial saving to the community in the future.

CONCLUSION

Syphilis is more infectious during the early or acute phase of the disease. Epidemiologic studies bring more beneficial results if confined to cases of primary and secondary syphilis, and early latent syphilis of duration less than a year. These studies constitute an important phase in any campaign to lessen the incidence of the disease. The work is not difficult and should be carried out by all physicians. Many early cases would thus be discovered, placed under treatment, and thereby rendered non-infectious. The results would benefit not only individuals but entire communities.

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DISCUSSION

DR. THOMAS W. MURRELL, Richmond: In the last few months there have been a number of papers published in the lay press dealing with the success of the overwhelming treatment of syphilis. The effect of these publications has been distinctly bad, inasmuch as they are giving the impression of a miracle treatment which does away with the boredom and trouble of what is recognized as standard therapy. While these new measures may tremendously influence the future, they are, at present, applicable only to a small minority of cases; and the big problem of syphilis has to be met by the proven measures of public-health control and the measures of therapy, which are proven on the basis of elapsed time.

The paper you have just heard is an example of what can be done and what must be done from the angle of public health. If work of this kind can be done in one small county, there is no reason why it cannot be done over a larger area. It is neither miraculous nor dramatic, but an example of hard work, which should receive our commendation.

DR. D. C. SMITH, closing the discussion: We were in hopes that somebody would ask some questions about the technique and so forth in following up syphilis contacts. Since no one did, I have one or two points I should like to emphasize.

Doctors have always hesitated to seek patients of any kind. In an important public-health condition, though, like syphilis, I think we have to forget about that side of what we might call medical ethics. It is for the good of other people that you are working; you are not just getting out trying to get patients. Where a doctor has a patient with early syphilis and he does not want to go into the matter of finding out the contacts and trying to get them in for treatment he can rely upon the health

officials. Health officers and health nurses in this State have had special training in the technique and method of following up syphilis contacts. If you do not want to do it yourself (while I think the doctor ought to do it himself), then you can report the names and addresses to the health department and allow the health department to interview the contacts and source cases. That, of course, will allow the person to go to whomever he prefers—either to you or to some other doctor.

At the University Clinic, we use mainly letters; and it is rather remarkable to see how much response one gets from a letter to patients. That is true not only of clinic patients but also true even of private patients. We have a form letter which starts out: "A friend of yours has been examined here at the Clinic and found to have an infectious disease, and we advise you to come in." We do not use the word "syphilis", but the letter does go out on the stationery of the Department of Dermatology and Syphilology. The stenographers speak of these as friendly letters.

Even in contacts who do not have lesions that are recognizable, those individuals should have a serologic follow-up, i.e., a test done every four weeks to six weeks for several months.

Recently a patient came in who appeared to have secondary syphilis. She was one of those rare individuals with secondary syphilis who do not have a positive test. That very day we happened to have her contact come in—a man with secondary syphilis, which, of course, clinched the diagnosis.

At the present time, because of the war situation, with training camps scattered all over this State, the search for contacts and source cases becomes a very important defense measure. It allows the diagnosis to be made early and prevents that individual from spreading the infection to somebody else, at the same time giving him a much better chance of getting a permanent cure. As Dr. Murrell said in his discussion, it is not cured in "one day," as recently claimed in a popular magazine.

LEUKORRHEA

A New Classification and a New Approach to Treatment*

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Leukorrhea is the symptom which brings more women to the physician, causes more misery to the patient and less concern to the doctor than any of the gynecologic complaints. Because it rarely disables the patient and only occasionally denotes fatal disease, its treatment is often dismissed with a prescription for the latest douche powder. Parenthetically, it should be said here that the vaginal douche, regardless of its chemical composition, is rarely if ever a satisfactory treatment for leukorrhea. A moment's reflection will reveal the fallacy of the vaginal douche as a therapeutic measure. The solution remains in contact with the vaginal mucosa and cervix for so short a time that its therapeutic effect must be nihil. Furthermore, infections of the genital tract are deeply placed in the branching racemose glands of the cervix or between the rugae of the vagina where the douching solution never enters. Lastly, some of the leukorrheas are the result of constitutional or endocrine disorders which are hardly within reach of a vaginal douche.

In order to establish a more practical and scientific approach to the treatment of leukorrhea, a study was undertaken on 200 consecutive gynecologic patients whose chief complaint was leukorrhea. Of this group, 174 could be followed for at least three weeks, and the principles of diagnosis and treatment set down in this paper were gleaned from my observations on this group.

*Read before the annual meeting of the Medical Society of Virginia, at Roanoke, October 5-7, 1942.

THE DIAGNOSIS

Clinical History. A carefully taken history gives valuable help in establishing the anatomical site of origin of the leukorrhea as well as the pathogenic agent operating to produce the abnormal discharge. One is no less important than the other. If the patient states that the discharge dates from a childbirth or abortion with a history of puerperal sepsis, then one thinks first of a streptococcal infection involving the cervix and endometrium. A history of thick, muco-purulent discharge always incriminates the cervix because mucus-secreting glands are not found elsewhere. Leukorrhea in young unmarried women with no history of sexual exposure or surgical manipulation suggests an endocrine basis, usually an hyperestronemia with increased desquamation of the vaginal epithelium, rather than infection. A thin, serous discharge associated with itching suggests the Trichomonad; while a "cream cheese" type of discharge with intense pruritus is probably

due to the Monilia. Purulent green-yellow discharge associated with some dysuria and frequency, especially when a history of contact with a suspected male is established, must focus attention on gonorrhea. Vaginal discharge in women past the climacteric or following radium or surgical castration will probably be found to originate in a thin atrophic endometrium and vagina which has become secondarily infected with bacteria. A blood-tinged, serous discharge suggests, but rarely is indicative of, malignancy; more often it originates from a chronic endometritis in a uterus with poor drainage due to a stenotic cervix. Leukorrhea in children offers the possibility of foreign body irritation, pin worm infestation, gonorrhea, or pneumococcus vaginitis.

PELVIC EXAMINATION

Vulva and Introitus. The labia, perineum, and introitus must be examined for evidence of leukoplakia, kraurosis, eczema, hair follicle infection, Skenitis, Bartholonitis, sebaceous cysts, and pin worms. Any one of these may be the sole cause of the leukorrhea, but more often the infected introitus is only a part of the infection which has already invaded structures higher up in the genital tract. For the clinical diagnosis of gonorrhea nothing surpasses in importance the careful inspection of Skene's glands. Involved in about 92 per cent of all women who have Neisserian infection and rarely invaded by any organism other than the gonococcus, it is the most important single sign in the differential diagnosis of gonorrhea. The pin-point areas of redness at Skene's ducts, seen when the urethra is everted with a cotton applicator, is tell-tale evidence. If pus can be expressed, so much the better. Redness about Bartholin's gland is often but not necessarily suggestive of Neisserian infection.

Vagina. The acutely red vaginal mucosa with punctate areas about the vaginal vault, associated with a profuse, serous discharge is characteristic of Trichomona vaginitis. The deep red, almost cyanotic vagina whose vault is filled with a white, creamy discharge will almost certainly be found to harbor one of the yeast fungi, usually the Monilia or the Trichophyton. The most frequent bacterial invaders of the genital tract are the anaerobic streptococcus and the colon bacillus; they are responsible in part for most of the mixed non-specific infections of the vagina and cervix. Each is found abundantly associated with other infections, such as the Trichomona and takes an active part as a secondary contaminant in many genital infections, notably in puerperal and post-abortal sepsis. The smooth, pale vagina with atrophic rugae is seen in senile vaginitis. In children with an acutely red vagina, one must consider the gonococcus, the pneumococcus, and the pin worm, as these account for most of the leukorrhea in children.

Cervix. Chronic endocervicitis is readily diagnosed by inspection. The dusky red endocervix with a muco-purulent discharge pouring from the external os is recognized without difficulty. Often it is accompanied by lacerations, eversions, erosions, polyps, and Nabothian cysts. It is the most common site of origin for leukorrhea. Practically all of the infections of the cervix are mixed infections, the anaerobic streptococcus and the colon bacillus predominating. It often serves as the focus of infection to reinfect other portions of the genital tract after they have been apparently cured; thus the eradication of infection from the deep racemose glands of the cervix is the first and most vital step in the cure of any vaginal discharge regardless of its type or origin. The deep branching glands of the cervix have naturally poor drainage and thus they are excellent sites for infection to linger and reinfect the entire genital tract. Satisfactory treatment depends on the destruction of these racemose glands.

Endometrium. The endometrium is more often infected than we have been led to believe. In my experience the thin, blood-tinged, foul discharge from the uterus is most often the result of poor uterine drainage secondary to cervical stenosis or acute uterine anteflexions. During every pelvic examination a sound should be passed to determine the patency of the cervical canal. Where there is obstruction and inadequate drainage, one will see a gush of foul drainage material when the internal os is dilated.

Endosalpinx. Rarely does a leukorrhea have its origin in the tube. Usually tubal infections seal off the cornual end of the tube, thus preventing any drainage into the lower genital tract. Nevertheless, in those cases of leukorrhea in which there is an associated salpingitis, Elliott diathermy or other appropriate treatment should accompany the attack on the leukorrhea.

LABORATORY EXAMINATION

Three simple laboratory procedures are required for the routine study and treatment of leukorrhea. First, the vaginal pH is obtained with Nitrazine paper. It is a good guide as to progress under treatment because, as the vaginal infection heals, the pH reverts towards its normal of 4.0. In all leukorrhea, with the exception of Monilia, the vaginal pH is elevated, returning to normal as the vagina is restored to health.

Second, a dry smear is stained with ordinary methylene blue; this smear having been taken from the anatomical site which is most affected. Gram stain is only occasionally necessary to confirm the diagnosis of gonorrhea. From the stained smear, the number of epithelial cells in relation to the number of pus cells is studied, and the type of epithelial cell observed. If there are more pus than epithelial cells, then the leukorrhea is infectious in nature. In the normal vagina the ratio of epithelial to pus cells is approximately one to one. If there are many large keratinized cells and very few pus cells, then the leukorrhea is endocrine and probably the result of too much stimulation by estrogens with excessive desquamation of the vaginal epithelium. On the contrary, if the epithelial cells are small, basal type and somewhat degenerate, and accompanied by many pus cells, there is absence of estrogen stimulation and atrophy of the vagina. This is the picture of senile vaginitis. Careful study of the ratio of epithelial to pus cells and the morphology and the degree of keratinization of these epithelial cells is equally important.

Next, the bacterial flora is studied. Large, thick rods are seen in the healthy vagina; they are the Döderlein bacilli. They are not seen in the smear of leukorrhea until recovery is well established. The most frequent pathogen seen on stained smear is the short chain streptococcus usually called the streptococcus subacidus. It is an anaerobe, the most common offending agent in the genital tract, often found on smear in common with the colon bacillus, and it is my practice to classify such cases as "mixed infections". The typical coffee-bean intracellular diplococcus is easily recognized as the gonococcus under methylene blue stain. It may be confirmed under gram stain. Rarely one finds the diplococcus in capsule which will usually be found to be one of the pneumococci. Staphylococci are not common offenders in the genital tract. The parasites are not seen on stained smear unless special technics are employed.

The third laboratary procedure of value is the wet smear. A drop of the vaginal secretion dissolved in about 1 cc. of saline and spread on a slide may reveal the highly motile, flagellated protozoa known as the Trichomona vaginalis. One may find the branching mycelium and the buds of a yeast fungus, usually the Monilia. Occasionally one finds the larvae of Oxyuris vermicularis, the lowly pin worm. Occasionally a case of Paramecium vaginitis or Entamoeba vaginitis is discovered.

CLINICAL CLASSIFICATION OF LEUKORRHEA (WITH PERCENTAGE INCIDENCE IN 200 CONSECUTIVE CASES)

1. ENDOCRINE

(a) *Adolescent* (2½%).—A white discharge made up of large keratinized epithelial cells and no pus. Superficial erosion of cervix usually found. Probably the result of excessive estrogen stimulation.

(b) *Senile* (6%).—Serous discharge with small atrophic and degenerate epithelial cells, often complicated by a secondary bacterial infection. Follow estrogen deficiency after normal climacteric or surgical castration by radium or oophorectomy.

(c) *Ovulatory* (3%).—Clear mucus often escapes from the cervix between the 13th and 16th days of the cycle, result of gonadotropic stimulation at time of ovulation.

2. BACTERIAL

(a) *Gonococcus* (9%).—Green-yellow discharge with the typical gram negative intracellular diplococcus. Produces a Skenitis, often a Bartholinitis, usually endocervicitis, endometritis, and endo-salpingitis. Produces a vaginitis in children.

(b) *Mixed Infection* (37%).—Predominantly anaerobic streptococcus and colon bacillus. Yellow or white muco-purulent discharge of years' duration. Focus usually in a chronic endocervicitis, eversion, erosion, laceration, or Nabothian cyst. Infection is also found about the hair follicles of the vulva and always in the deep, basal layers of the vaginal mucosa.

(c) *Pneumococcus* (2%).—Yellow purulent discharge, most often seen in children and diagnosed by finding the typical gram positive, encapsulated diplococcus.

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3. PARASITIC

(a) *Trichomona* (21%).—Profuse, irritating serous discharge associated with an acute vaginitis caused by the motile, flagellated protozoa which may or may not be related to the Trichomona intestinalis.

(b) *Monilia Albicans* (9½%).—White, cheese-like discharge. The branching, budding mycelium on wet smear makes the diagnosis. Vulva and cervix frequently involved.

(c) *Oxyuris Vermicularis* (Pin Worm) (2%).—Suspected in children with history of anal itching. One of these cases was in an adult. Larvae seen on wet smear. Lower bowel, vulva, and cervix usually involved as well as vagina.

(d) *Paramecium* (2%).—A well differentiated, highly specialized, unicellular organism, easily recognized by its rapid, fluid motility. It causes acute vaginitis and cervicitis. Usually associated with cystitis.

(e) *Entamoeba* (½%).—Causes acute vaginitis with serous discharge. Always a contamination by Entamoeba intestinalis.

(f) *Trichophyton* (2%).—Causes pruritus vulvae, often a vaginitis. Thick discharge with segmented mycelium on wet smear.

4. FOREIGN BODY

(a) *Contraceptives* (2½%).—Irritating jellies, douches, and mechanical devices may set up a non-specific vaginitis and cervicitis.

(b) *Masturbation* (1½%).—Most every type of household article small enough to be introduced into the vagina may at times be found. Organic substances such as hair, food particles, and wood set up the most irritation.

TREATMENT—GENERAL PRINCIPLES

It must be remembered that all of the leukorrheas with the exception of that caused by the gonococcus and that resulting from atrophic or senile vaginitis must be treated empirically. Leukorrhea caused by the gonococcus is treated specifically by sulfathiazole orally and sulfathiazole locally in the form of suppositories. Senile vaginitis is treated specifically with stilbestrol orally and stilbestrol locally in the form of a vaginal suppository. These two types of leukorrhea make up approximately 15 per cent of all cases which must be treated in private practice. Thus it becomes apparent that approximately 15 per cent of all patients with leukorrhea may be treated with specific therapy. The other 85 per cent must be treated empirically. It is no wonder, then, that a long list of so-called "specifics" for this or that type of leukorrhea have been suggested and found wanting. The truth is that no specific cure is available for this large group of patients. That does not mean, however, that most vaginal discharges cannot be stopped and the patient relieved of all symptoms. She can be cured if the pathological physiology is understood and the principles of treatment applied in accordance with this knowledge of pathology.

Obviously, the leukorrhea originating from a foreign body irritation, such as contraceptives or masturbation, is cured by removing the cause. The adolescent leukorrhea improves on thyroid through the anti-estrogenic effect of thyroid therapy. Leukorrhea of endometrial origin, seen occasionally in post-menopausal women, is cured by dilating a stenotic cervix. Pin worm vaginitis is treated by gentian violet locally and gentian violet tablets orally. Amoebic vaginitis is treated by vioform powder insufflations and vioform tablets orally. This leaves a group of leukorrheas, 81 per cent of the total, which may be classified as infectious leukorrhea because they result from some infecting organism, bacteria, parasite or fungus.

What are the important pathological principles of infectious leukorrhea to bear in mind before beginning treatment? They may be listed as follows:

PATHOLOGY OF INFECTIOUS LEUKORRHEA

(a) *Vulva.*—Skin of the vulva and perineum and especially the hair follicles harbor the bacteria, parasites, and fungi. Skene's glands only are involved in gonorrhea. Bartholinitis may or may not be gonorrheal.

(b) *Cervix.*—Deep racemose glands of the cervix are always involved in the infectious leukorrheas. Stenosis of cervix may be found.

(c) *Vagina.*—The rugae and small invaginations of the vaginal mucosa as well as the basal layers of the epithelium itself can be demonstrated to harbor the bacteria, parasites, and fungi.

(d) *Glycogen.*—The glycogen content of the epithelium is reduced in the infectious leukorrheas. This interferes with growth of normal acid producing vaginal flora.

(e) *Vaginal pH.*—Vaginal pH is elevated in all infectious leukorrheas except that caused by the Monilia. Restoration of normal pH is essential for

the destruction of the offending agents and for the restoration of normal vaginal flora.

(f) *Vaginal Epithelium.*—Vaginal epithelium is somewhat degenerate in infectious leukorrheas, poorly keratinized and largely basal cell type in senile vaginitis, and hyperkeratinized in adolescent functional leukorrheas.

These pathological principles must be borne in mind as the fundamental approach to the treatment of leukorrhea depends upon them. Every case of infectious leukorrhea is now treated by the author according to the technic described below. This is followed in every case of infectious leukorrhea except those where specific therapy is available. There are five steps in the treatment.

TREATMENT ROUTINE FOR THE INFECTIOUS LEUKORRHEAS

1. *Shave the Vulva.*—Practically all of the bacteria, parasites, fungi, and yeast may be found in and around the hair follicles of the vulva. Autoinoculation of the vagina is inevitable unless it is shaved. The patient is instructed to wash the vulva and perineum well twice a day with soap and water. She must have no intercourse during the three weeks' treatment period.

2. *Sound the Internal Os.*—Patency of the cervix is essential to adequate uterine drainage. If a small sound cannot be passed, particularly if it cannot be passed just after the menses, then the os must be dilated and a flexible spring coil stem pessary inserted.

3. *Chemical Cautery to Vulva and Vagina.*—The bacteria, parasites, fungi, and yeast which cause the leukorrhea are found in the deep layers of the skin, on and even in the basal layers of the vaginal epithelium. It is essential to destroy the infection in these deep areas and this is accomplished only by removing the superficial epidermis and superficial keratinized layer of the skin and vaginal epithelium. This is readily done by painting the shaved vulva and the entire vagina with a meta cresol sulfonic acid solution of formaldehyde, the most convenient commercial product for this purpose being *Negatan* (issued by Eli Lilly & Company). Make sure to rotate the speculum so as not to miss the anterior and posterior vaginal walls. Within 48 hours after this therapy the coagulated superficial epithelium peels off, exposing the deeper basal layers of the mucosa. This coagulum is always superficial, experience with well over 200 applications never having been followed by a burn or ulceration. The *Negatan* is applied by swabbing with a saturated cotton pledget, the excess solution being removed with dry cotton. This cauterization of the vulva, skin, and the vaginal mucous membrane is repeated once at the end of one week.

4. *Electric Cautery to Cervix.*—The deep, branching, racemose glands of the cervix with their narrow ducts draining into the cervical canal form excellent pockets for the bacteria, parasites, and yeast fungi. In almost every case of leukorrhea infection can be demonstrated in the cervix. It can be eradicated only by the destruction of the cervical glands. These glands extend to a depth of about 4 mm. beneath the surface of the endocervix; it is, therefore, necessary to destroy the cervical mucosa to a depth of 4 mm. and this is accomplished with a hot cautery or electrocoagulator. The burned endocervix sloughs out in about one week and this raw granulating area re-epithelizes in three weeks. It is for this reason that the patient is instructed to refrain from coitus for three weeks.

5. *Phenylmercuric Nitrate in Pectin Jelly.*—The patient is given a prescription for Phenylmercuric Nitrate (1-24,000) in Pectin Jelly, 1½ drachms, to be inserted into the vagina morning and bedtime for three weeks. This mixture has just been made commercially available, being packaged with a special vaginal pipe for the insertion of the jelly.[1]

Phenylmercuric nitrate, which has recently been accepted as a New and Non-official Remedy by the Council on Pharmacy and Chemistry of the American Medical Association, is one of the most effective bactericidal and fungicidal agents. Its use in the form of a douche in the successful treatment of leukorrhea has been previously reported. Numerous studies on its systemic and local toxicity have demonstrated its safety. Its potent bactericidal and fungicidal properties can be demonstrated in the laboratory, as seen in the accompanying illustrations which show the sterilizing effect of the drug on agar plate cultures of bacteria and fungi, when used in the concentration of 1-24,000. Its potent bactericidal and fungicidal properties can be demonstrated in the patient, as shown in the illustrations of vaginal smears taken before and after treatment. Three

1. Phenylmercuric nitrate in pectin jelly, issued under the trade name *Merpectogel*, was furnished by Wm. P. Poythress & Company, Richmond, Virginia.

weeks of continuous treatment with phenylmercuric nitrate in pectin jelly will sterilize the vagina. No bacteria, parasite, fungus, or yeast can be demonstrated after three weeks of therapy with pectin jelly containing phenylmercuric nitrate. The drug is dissolved in pectin jelly. Pectin was chosen after much consideration of the practical problems and the pathological physiology involved in leukorrhea. It must be emphasized that the therapeutic agent for the treatment of leukorrhea must fulfill certain requirements. There are five essential properties which the therapeutic agent employed in the treatment of leukorrhea must have.

These five essential properties are:

1. *Prolonged Action.*—The vaginal douche is ineffective because it remains in contact for so short a time that its therapeutic efficiency is nullified. Pectin sticks like thin mucilage and can be found in the vagina twelve hours after insertion.

2. *Bactericidal and Fungicidal Activity.*—A potent, non-toxic chemical is the phenylmercuric nitrate used in combination with the pectin jelly. Also the pectin itself is bacteriostatic and an excellent deodorant.

3. *Acidity.*—Vagina normally has a pH of 4.0. This acidity reverts towards alkalinity in all the infectious leukorrheas except Monilia. Pectin has pH of 3.1 which is intrinsic in the pectin molecule (pectin is polygalacturonic acid) and not the result of adding a water soluble acidifying agent which would comparatively be quickly carried out of the vagina by normal secretion.

4. *Carbohydrate Content.*—The normal vaginal flora is encouraged by a carbohydrate medium. Furthermore, the glycogen content of the vaginal epithelium is low in leukorrhea and should be replaced. Pectin is a carbohydrate.

5. *Epithelial Stimulation.*—The injured vaginal epithelium and the cauterized cervical epithelium are stimulated to more rapid regeneration by pectin. This epithelial stimulating property of pectin was first demonstrated by Dr. Bernard Fantus who proved the cellular stimulating properties of this substance.

Note: After completion of the treatment program, the patient is advised to insert 1½ drachms of phenylmercuric nitrate in pectin jelly during menstruation. This will prevent reoccurrence and at the same time acts as an effective deodorant and a most satisfactory and scientific addition to menstrual hygiene.

SUMMARY

Based on the study of two hundred cases of leukorrhea, the following classification with percentage, incidence of occurrence, and key to treatment is offered.

LEUKORRHEA

1. ENDOCRINE		
(a) Adolescent	(2½%)	Thyroid therapy (anti-estrogenic?)
(b) Senile	(6%)	Stilbestrol locally and orally
(c) Ovulatory	(3%)	No treatment
2. BACTERIAL		
(a) Gonococcus	(9%)	Sulfathiazole locally and orally
(b) Mixed Infection (Anaerobic streptococus and colon bacillus predominating)	(37%)	Special treatment—below
(c) Pneumococcus	(2%)	Sulfathiazole locally and orally
3. PARASITIC		
(a) Trichomona	(21%)	Special treatment—below.
(b) Monilia Albicans	(7%)	Special treatment—below.
(c) Pin Worm	(2%)	Gentian violet locally and orally
(d) Paramecium	(2%)	Special treatment—below.
(e) Entamoeba	(½%)	Vioform powder insufflation and tablets orally
(f) Trichophyton		Special treatment—below.
4. FOREIGN BODY		
(a) Contraceptives	(2½%)	Desist
(b) Masturbation	(1½%)	Desist

Special treatment based on knowledge of the fundamental pathology of leukorrhea is used as a routine therapy in all cases except those in which specific therapy is available as outlined above. The treatment is as follows:

1. Shave the vulva—scrub daily with soap and water.

2. Chemical cauterization of vulva and vagina with meta cresol sulfonic acid solution of formaldehyde (*Negatan*—Eli Lilly & Company). Repeat cauterization in one week.

3. Establish patency of internal os by passing sound into the fundus.

4. Electric cauterization of endocervix.

5. Phenylmercuric nitrate in pectin jelly[1] inserted b. i. d. into vagina for three weeks. Insert jelly[1] once daily into vagina during menstruation for three months following treatment.

Medical Arts Building.

A REPORT ON THE RECOVERY OF TUBERCLE BACILLI FROM MICROSCOPICALLY NEGATIVE SPUTUM COVERING A PERIOD OF EIGHT YEARS*

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During the past ten years numerous studies have been made in this country in an effort to obtain comprehensive data on the recovery of tubercle bacilli from body fluids. The initiation of such studies may be attributed to the occurrence of repeated negative microscopic evidence from suspected or known cases of infection. When it is realized that there must be present about 100,000 organisms in each cubic centimeter before there is much probability of finding them in smears, it becomes clear that the microscopical method of examination must be considered with due regard for the errors involved.

In the light of present day knowledge, traditional laboratory methods of examination for the early diagnosis of tuberculosis are becoming uncertain, and sole reliance upon microscopic work inadequate; these statements being applicable, however, to questionable and border-line cases, for the familiar view of a high Gaffky can be found, of course, with little experience and less trouble. So it is well to emphasize that in the diagnosis of tuberculosis, specimen of which may contain an immeasurable number of tubercle bacilli and still be microscopically negative, one should proceed further than the smear method; for a negative report involves an element of doubt, whereas, a positive culture assumes definite classification.

Animal inoculation is a time-honored method, and the susceptibility of the guinea pig extremely high. It has been routinely used for this purpose for a long time and is undoubtedly a fastidious detector of tuberculous infection. However, less than ten living tubercle bacilli, even of virulent strain, cannot be relied upon to cause disease in every animal; and there must be from ten to one hundred bacilli before inoculation is sure to induce a progressive and fatal disease.

A fact that strikes one forcibly is that the ratio of positive results from inoculation to that of positive results by direct smear is at least 100 to 1 in favor of the animal method; and the recovery of tubercle bacilli by whatever method assumes an important role in the security of those who come to us for help and advice.

It is to be regretted that no attempt has been made in this work to determine the relative merits of animal inoculation and the culture method, and the study is in too controversial a stage to permit of fixed opinions based on the various reports and points of view. Nevertheless, some of the modern bacteriological tests and medical literature make the claim that the more recent advances in the development of culture methods make it possible to attain equal or even greater accuracy by this method than by inoculation. Be that as it may, the matter seems open to further experimental investigation, for as experiments are multiplied, principles are better understood.

This work was begun here in 1934 and has continued to the present time. It was undertaken primarily as a diagnostic effort upon patients entering this institution. During this period of eight years, of 1087 admitted patients with repeated microscopically negative sputum, 8,830 cultures have been examined (this figure does not include repeats or special cases). Throughout this time positive evidence in sputum negative by smears has been demonstrated time and again by the culture method. In 1934, with technical difficulties still to overcome, the results of early performance were not very comprehensive, and we were unable to achieve anything comparable to those of later years. In that year we recovered only 10.1 per cent of positive cultures from patients microscopically negative. In 1941 the showing was more favorable, since we obtained 34.7 per cent positive cultures from specimens negative by smears. For the past five years the percentages have been fairly constant; any variation from year to year being due, no doubt, to the number of nontuberculous cases admitted from time to time. The incidence of positive cultures from specimens negative by thorough microscopic examination appears all too fre-

*Read at the annual meeting of the Medical Society of Virginia at a luncheon session at Catawba Sanatorium, October 7, 1942.

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quently to be ignored; and support of this view will be found in medical literature. During the eight years under review, we recovered an average of 25.84 per cent positive cultures.

Within the limits of a small series of cases, it is not possible to establish any correlation of values in this work, and one frequently finds contradictory figures as to percentages of positive cultures from microscopically negative material. When it is considered how minute may be the number of tubercle bacilli in such material, discrepancies are readily understandable, for it is a tedious and painstaking task at best for even the assiduous to discover them. From the very trend of our nature, we are all too prone to lean upon the cultural for a final report. In this connection it is worth mentioning that unreasonably high percentages in culture work should be accepted with caution; for it all hinges upon zealous and meticulous effort.

There are a variety of media and culture methods, the majority of which are essentially the same. We have employed routinely three methods and a like number of media, using twelve culture tubes for each specimen. With due recognition of the merits of many media, it is acknowledged that Miraglia's, Loewenstein's and Petragnani's are undoubtedly the standards of most laboratories. There is little choice among the three, since all are excellent for the cultivation of tubercle bacilli. Evidence from observation, however, would suggest that it is best to use more than one method and medium for accurate work, because occasionally a colony or two will be recovered by one system, whereas the others will give negative results. No explanation for the selectivity of the organism can be offered. In most cases, one method and four culture tubes of any one standard medium will suffice and still attain considerable accuracy. As might be expected, work of this type is beset with possibilities of technical errors, and though a good portion of correct answers may be obtained with diligence, the culture method will not commend itself to those who seek short cuts, except in the most obvious cases.

Since standard media are somewhat difficult to prepare, of necessity we became interested in a substitute; one that would function well without greatly impairing fundamental values. There is on the market a well known medium originated by Bordet and Gengou for the cultivation of pertussis. This is manufactured by Difco Laboratories in powdered form, and has been tried here for several years. By its use many processes are considerably simplified, for it is necessary only to autoclave it, cool and add citrated blood, which can be readily appropriated from specimens collected for Wassermann or sedimentation tests. We do not mean to represent this medium as comparable to the standards, but there are many favorable instances of its performance.

While the acid-fast group of bacteria is composed of a number of organisms, few of these offer difficulties of distinction from the tubercle bacillus, for those parasitic upon man have special characteristics sufficiently marked to serve for differentiation. However, microscopic examination alone cannot discriminate between tubercle bacilli and other types of acid-fast saprophytes. Four factors are significant: time of development upon artificial media, bacillary clumping, chromogenic properties and variability in staining.

The acid-fast bacilli vary in the ease with which they grow under artificial conditions. Saprophytic acid-fast bacilli will readily develop at room temperature and upon ordinary laboratory media in two or three days, whereas the tubercle bacilli require special media for propagation and may take a week or more at incubator temperature before growth becomes visible to the naked eye. If there is doubt about an acid-fast colony, it should be transplanted and its development observed. If it attains a visible growth in three to four days, it is not tubercle bacilli.

The tubercle bacillus possesses another differentiation point which is significant and should go far towards distinguishing this bacillus from other acid-fast groups. The bacillary adhesiveness of the organism is well known. Instead of the uniform smear of individual bacteria, one encounters the usual clumping which is so characteristic of this organism. It is impossible to obtain a uniform distribution of bacterial entities throughout the whole smear if made from a culture: some clumping of bacterial masses will invariably be present.

A third point of distinction is found in the chromogenic properties of many saprophytic acid-fast groups. Pigmentation is more noticeable than in the tubercle bacillus, the color scale ranging from pink, yellow to brick red. There is, of course, considerable pigment in old cultures of tubercle bacilli, but in very young cultures the color is not marked.

A factor common to the acid-fast group is variability in staining properties. The tubercle bacil-

lus once stained, the dye is tenaciously retained; whereas the members of the saprophyte group vary more or less in their ability to withstand decolorization.

It may seem unnecessary to discuss the saprophytic acid-fast group to this extent; but since they are so widely distributed and occur so much more frequently than was formerly suspected, it is relevant to point out the pitfalls that they may present in culture work.

The procedure for the recovery of tubercle bacilli from microscopically negative effusions is simplicity itself. If free from secondary organisms, which is usually the case, the specimen is merely centrifuged and the sediment transferred upon a medium. The positive cultures ranged from 37.8 per cent in 1934 to 65.7 per cent in 1941; or an average of 57.2 per cent during the period of eight years.

It will be noted that these percentages are considerably higher than those for sputum. Evidence in support of these findings is that most effusions at this institution are of tuberculous origin; also that in the process of collecting specimens the cooperation of the patient is not requisite to the same extent.

Within certain limits, this work presents one difficulty which it has not been possible to overcome. It is the problem of obtaining a good specimen from the respiratory region. Three specimens of sputum are collected upon different days and sent to the laboratory for examination; following this, if results are negative by direct smear, the patient is given a bottle for a 24-hour sample, which is either concentrated or cultured. The bottle attracts considerable attention among the patients, for they soon become aware that it signifies negative results from previous examinations. Thus the patient early becomes negative-conscious; and, being human, he naturally desires to remain negative. Even with individual instruction and persuasion, all too often a poor specimen is received for examination, with, of course, negative results.

Throughout this work, for purposes of comparison, it was deemed advisable to use positive controls, the observations of which deserve mention.

During this period, 170 positive specimens with a Gaffky I, 120 with Gaffky II and 110 Gaffky III to VIII were cultured routinely under conditions similar to those of the negative specimens. A total of 400 controls were checked, and it is interesting to note that since 1935 not a single control containing a Gaffky I has failed to develop by the culture method. The higher Gaffkys, as might be expected, were all recovered with ease.

When we consider a Gaffky I, with a text-book equivalent of one to four bacilli per slide, and a yearly average of 25.8 per cent positive cultures from specimens with negative Gaffky, it seems that the merits of the culture method should be conceded without much doubt.

RADIUM: THE HISTORICAL ASPECT*

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The actual knowledge of radium began with its discovery in 1898 by Professor and Madame Pierre Curie of the Sorbonne in Paris; but certain events antedating this epochal discovery are of interest in a prelude to the historical narrative of this element.

As far back as 1752, when Benjamin Franklin made his celebrated experiment with the kite and key, William Watson of London passed an electric current through a tube partially exhausted of air, and found that the discharge traversed this more easily than air at atmospheric pressure. At about that time mercurial air pumps were developed; much higher vacua were obtained, and the passage of electrical currents through rarefied gases began. Such an experiment was done in 1859 by Julius Plucker, the German physicist. He noted a peculiar kind of luminous discharge which was henceforth called the cathode stream.

That the cathode stream represented a fourth state of matter was the conclusion reached in 1879 by Sir William Crookes.

As the result of such experiments Wilhelm Konrad Roentgen, Professor of Physics in the University of Wurzburg, Bavaria, was the first to recognize new rays which "for the sake of brevity" he called x-rays. This discovery was semi-accidental and oc-

*Read before the Junior Clinical Club.
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curred in 1895. Experimenting with a tube screened in black paper, Professor Roentgen found that barium-platino-cyanide crystals on the opposite side of the room became brilliantly fluorescent, as if exposed to sunlight. Thus he demonstrated the existence of invisible rays produced by the arrest of the cathode stream capable of penetrating opaque bodies.

His discovery opened great fields of investigation and led indirectly to the discovery of radium. Physicists began to seek substances which might spontaneously emit rays similar to Roentgen's rays.

Within a few months such a discovery was made. Henri Becquerel at the Museum of Natural History in Paris, attempting to determine if fluorescent substances gave off such rays, obtained a photographic effect when he placed uranium salts fluorescing in the light near plates wrapped in opaque paper. Then, one day, because the light was too bad to experiment, he put the salts and the plates in a dark cupboard. Subsequently one of the plates was developed and a photographic effect was found, showing that fluorescence was not responsible for the phenomenon. So was discovered radioactivity. For this work Becquerel later received, jointly with the Curies, the Nobel prize.

A search for other radioactive substances went on. The Curies worked along this line. They tested the activity of various minerals containing uranium and found that some of these minerals, for example pitchblende which contained 50 to 60 per cent of uranium, were several times more active than could be accounted for by the contained uranium. Following this lead, while working on several tons of pitchblende presented by the Austrian government, they discovered in 1898 a substance 2,000,000 times as radioactive as an equal weight of uranium. This substance was given the name of radium.

Thorium and numerous other radioactive elements were then isolated. In 1900 E. Rutherford showed that thorium continuously emitted a radioactive gas, thoron. Soon afterward Dorn isolated a radioactive gaseous emanation from radium, radon, a transitory product of great importance.

Rutherford in 1899 showed that the rays of a radioactive substance were not all of the same kind. He demonstrated the easily absorbed alpha rays and the more penetrating beta rays; as a result of the work of Giesel, Becquerel, Curie, Rutherford, Bragg, and others it was shown that the former were helium atoms and the latter negatively charged electrons.

In 1900 Villard discovered the third type of rays, the gamma rays, the most penetrating of all. These were found to be of the same nature as x-rays, electro-magnetic waves of extremely small wave lengths. There followed the accepted theory that radioactive elements decompose, with the emission of radiation, forming new atoms having different chemical properties.

The ionizing effect of the rays, their absorption by matter, and the phenomenon of scatter with the consequent production of radiation of a lower frequency were discovered.

Chemical changes as the result of exposure to x-rays were noted. In 1899 Schaudinn reported his studies of the action of roentgen rays on many kinds of unicellular animals.

In 1903, Bohn, working on the eggs and larvae of sea urchins and frogs, first showed that immature and developing forms were more affected than were adult animals, that rapidly growing tissues were most radio-sensitive. In 1904, Perthes, as the result of his experiments with fertilized ascaris eggs, concluded that cells were most sensitive at the time of nuclear division.

Within a year of the discovery of x-rays injuries to the skin by these rays were observed. The biologic effect of radium is said to have been discovered quite accidentally in 1901, and radium therapy might be dated from that time.

It happened in this fashion: Becquerel carried a glass tube of radium in his waistcoat pocket for some hours and in about two weeks noted a severe burn of the skin. This was interpreted by Besnier as being due to the effect of the rays. Curie experimented on himself and confirmed the relationship. Besnier suggested that radium be loaned to the St. Louis hospital in Paris for clinical experiments, and this was done in 1902. In 1904 Danlos published an account of therapeutic results then obtained. Dominici concluded from his own studies that the radio-sensitivity of a tissue varied inversely as its degree of differentiation. In 1904 and 1905 Heineke demonstrated the very high sensitivity of lymphatic tissue and the high, but less pronounced, sensitivity of the hemopoietic organs. Between 1903 and 1906 numerous workers demonstrated the high radiosensitivity of the testicular and ovarian germinal cells.

In the meanwhile it was shown by many observers that tumor tissues in general were more sensitive

than normal tissues; W. J. Morton, of New York, and E. Deutsch, of Munich, independently reported good results in the treatment of uterine fibroids by x-ray; and Robert Abbe of New York began using radium for superficial lesions and first used interstitial radiation. In 1906 Louis Wickham, of Paris, reported the result of two years of clinical investigation with radium, principally on skin epitheliomata. This led to the formation that year of the Laboratoire Biologique du Radium. H. Dominici of that institution aided in the development of various forms of applicators for the treatment of deeper growths, and especially he developed screens for greater filtration and penetration, and tubes for interstitial treatment. He particularly introduced methods of filtration to exclude the caustic beta rays of radium and formed the basis of this principle in modern technique.

Ouidin and Verchere, in 1906, and Cheron, in 1911, described methods of successfully treating menorrhagia and uterine fibroids by the intrauterine application of radium.

Wickham, Cheron, Fabre, Dominici, and Jacobs reported the treatment of carcinoma of the cervix with radium in and about 1910. Howard Kelly, of Baltimore, treated his first case of carcinoma of the cervix with radium in 1909, reporting with C. F. Burnam his results in 1915.

Great development followed the pioneer work and several now famous institutions devoted to radiotherapy were formed. Outstanding among these were the Radiumhemmet founded in Stockholm in 1910, the Institut du Radium of the University of Paris, and the Memorial Hospital in New York. The Radium Institute was founded in 1914 and consisted of two departments of scientific investigation. One department was a part of the University of Paris, was under the direction of Mme. Curie, and was devoted to physical and chemical research on radio-activity; the other was a branch of the Pasteur Institute, was under the direction of Professor Claude Regaud and dealt with the therapeutic and biological aspect. In 1922 an out-patient department, the Foundation Curie, was established.

Prior to World War I the most productive source of radium was the pitchblende from St. Joachimstal in Czechoslovakia. Later rich ores of uranium were found in the deposits of copper at Kantanga in the Belgian Congo; this was found to contain the richest radium deposits known. Large amounts of radium have been produced in the United States from deposits in Colorado but the production is said to be comparatively expensive. Smaller amounts have been produced in other countries.

Today radium has become an indispensable part of Medicine. Until World War II cancer clinics were being formed throughout the world; refinements in technique are being made, percentages of cures are being increased, and the work goes on.

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THE AMERICAN PATTERN OF ADMINISTRATIVE MEDICINE*

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There have always been the two parallel paths of medical practice, one that of the individual, the other of medical institutions, within which or out of which the doctor served as a member of a cult, sect, religious order, professional group, or under government.

Strength of personality developed out of the experience in many lands of a Galen or a Paracelsus, a Sydenham or an Osler, and the power of institutions of learning and of resorts to which the sick repaired grew with the skills of many collaborating to teach, to discover sickness and to heal it.

These have been reciprocal, interdependent, mutually stimulating features of that great mother of society, the art and science of medicine, the application of all experience and all the knowledges to the relief and comforting of mankind through or around his disabilities, by learning and applying Nature's secrets, the whole incomparable testament of human biology.

If we would be useful in our days, alert to the shifting of our social scenery, in step with the hastening tempo of the changes which follow new discoveries, massive growth of material wealth, and the eager groping of the average family for benefits out of the overflowing cornucopias of the sciences, we must as physicians, as citizens of no mean nation, members of the onrushing global commonwealth of man, look at ourselves objectively, consider if we have been worthy of the immense trust imposed upon us by virtue of our privilege as persons licensed by our fellows to deal with the intimacies, tragedies, exaltations and despairs of life and death.

We know our teachers as the students of Hippocrates knew him. We look with reverent admiration at the elder clinicians who work their respective wonders of diagnosis and treatment before our eyes in home, office and hospital. The very essence of our bond from generation to generation is the continuity of the medical tradition of individual skill and personal responsibility for all professional acts.

Over the years from Cos, Epidaurus, Gondra Sapor, Salernum and their successors, even the Lazarettos of John Howard's day and the centuries-old hospitals of England and other lands, down to the latest expression of organized care of the sick, there has been a wholesome sharing of growth and experience between personal and institutional medicine.

We can afford the time to stand off and look at the structure as it has grown about us, to recall something of its origin, its functions, scope and methods. I think of this structure as one symmetrical and beautifully proportioned as the Parthenon, exquisitely elaborate as the Cathedral of Chartres, enduring and uplifting as the Lincoln Memorial.

Setting apart as a topic for some other evening the private, or at least personal practice of medicine, based on the self-selection by the patient or on his behalf of the physician, and an economic relation between these two that is mutually acceptable, let us define administrative medicine and consider what I like to call the organized care of the sick and public health. Organized care of the sick consists of medical resources for the individual patient through institutions and agencies within which the responsibility for policy and performance of professional services is determined by the medical opinion of a group of physicians voluntarily associated for this purpose or accepting these obligations for civil government. Public health services consist of the application of the sciences and arts of preventive medicine through government for social ends.

Organized care of the sick in the civil sense includes at least eight distinct functional divisions, largely as an outgrowth or flowering of that central symbol of community care of the sick, the general hospital.

The general hospital, an institution primarily for the horizontal care of the sick, for whom home conditions are unfavorable for the particular illness or in conditions demanding such equipment and personnel and the combined resources of many as cannot be brought to the home for diagnosis or for treatment,

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has set patterns of organization, of trusteeship, of staff responsibility, of community relationships for support and for service which have been closely followed by all the other units in the same field of endeavor.

In this country contemporaneously with the building of our first hospitals came that provision for the care of the vertical sick, the up or ambulatory patient, which we call the dispensary or out-patient department. This provision for the beginnings and endings of hospital care, this place where the admission and discharge of patients suitable for bed care has made possible the management of the sick over a life-time as distinct from the brief urgent need of emergency conditions still appears as an independent institutional service, although generally recognized as an integral part or department of a hospital.

There followed chronologically as the next administrative provision for the sick the transportation or ambulance system which after evolution in the field during our Civil War was introduced in New York City by Colonel Dalton as a life saving method in a crowded metropolis. This brought the doctor of the hospital into the street, shop, factory or home, to the side of the woman in childbirth, to the site of fire, catastrophe, flood, murder, suicide or other accident.

Next in order of development came the visiting nurse, usually supported independently of the hospital, with a separate board, an advisory medical committee, and a director of staff and field education. While in the main visiting nurse services continue to be extramural agencies, cooperating with but not operating out of or as a part of the corporate being of a hospital, they represent the further extension of group standards, of collective techniques, of the skills and responsibilities developed in hospital wards and operating rooms for persons in their homes who cannot or need not enter a hospital for care.

More recently there have been created to meet a number of difficulties and conditions both medical and economic arising in the course of long enduring illnesses, special hospitals for the chronically ill. No advance in the humane care of the sick has illustrated better the modern conception of the right of the invalid to benefits from all the resources of the sciences. The unsuitability of the general hospital for chronic patients; the relative lack of attention given to the chronic ailment when the accident case or the pneumonia demand instant attention to save a life; the costliness of care; the social, the psychiatric, the employment, and the therapeutic problems of the chronic sick, all demand expert, specialized provision.

A sixth unit in our growing family of organizations for the sick is the convalescent home or hospital, that way station for the patient now out of danger, between the dependent state of bed care and the resumption of self-support, of housekeeping, of teaching or shop work.

Not only do such institutions facilitate complete and earlier recovery, but they relieve the general hospital of a burden of patients who no longer need the services of expensive and elaborate equipment and technical staff.

As the physician became increasingly aware of the social, economic, employment and family factors or components in the origin and management of disease, there came about through the genius and broad philosophy of Dr. Richard Cabot of Boston, an additional professional resource first applied for out-patients and now a recognized indispensable department of a general hospital. I refer, of course, to the social service department.

Medical social work, as a coordinated professional service with that of physicians, nurses and dentists on the staff of a hospital, and clearly distinguished from the services of the family relief or welfare agency of the community has become a respected field from which the diagnosis and treatment of the sick has benefited in accuracy and thoroughness, and through which the medical plan for the patient has been made more effective, because better understood and interpreted in the patient's home.

Finally we come to that instrument of society which first appeared to be a necessity and was proved to be practicable and efficient in the midst of the economic depression of the last decade, particularly in our large cities, home care of the sick by a panel of physicians cooperating under some agreement as to policies, or as an externe service by the staffs of hospitals for people of the neighborhood.

Leaving these functions for the sick thus briefly outlined let us similarly sketch the half dozen func-

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tions accepted the world round as essential for the social application of preventive medicine.

There came at the beginning, and remains with us today in ever improving accuracy and completeness, the bookkeeping of the comings and goings of the human family and their passing or enduring and often fatal illnesses, the vital statistics of births, deaths and disease. Out of this were built the foundations of our knowledge of prevalence and much of the preventability of disease.

The first use made of vital statistics was to educate the public in the nature and controllability of communicable diseases, the pestilences of our ancestors, and still a present hazard to survival. The function of communicable disease control, has been more nearly well performed in the public's interest than has the prevention of any other category of disease of social significance.

As a corollary and necessary function, parallel and contributing mightily to control of communicable disease came environmental sanitation, a contribution of engineers, physicists, chemists, architects, entomologists and others.

The fourth public health function was demanded by the last two mentioned and came into being for states in 1894, and for cities in 1892, the public health laboratory for diagnosis, specific therapy, research analysis and control of foods, drugs, water, milk, air, etc.

These four dealing chiefly with activities depending for their effectiveness upon the exercise of authority, under the so-called police power of the sovereign states, were only latterly followed by the two which have revolutionized the relation of the health department to the public and to the medical profession. Only in 1908 was the first Bureau of Child Hygiene created in a department of health and in 1914 the first Bureau of Public Health Education was established, in each instance in the City of New York.

These two functions now well developed and organized depend upon the principles of educated public opinion and personal cooperation.

The bureau of maternity, infancy and child hygiene of today concerns itself with all matters affecting human reproduction, the growth, and development of children and the protection of the minors in a family against handicaps to body or mind.

The ever expanding function of health education, crude as it is, nevertheless gives promise of going far in its contribution to universal interest in health protection.

Time and the occasion do not permit an extended description of the inter-relation of these fourteen building stones in the structure of administrative medicine, or of the respective roles of voluntary or unofficial and official or tax-supported institutions and agencies, nor of the respective parts played at the local state, national and international levels, but I should like to call attention to some of the merits and results of this product of slow and well-tested evolution of the past and to some of the threats to its continued productiveness and related benefits in the years ahead.

The chief social excellence of the present facilities for care of the sick is their dual origin, support and standards, the one of voluntary, and the other of official nature. It is well that every community feels responsible for voluntary care of its sick. This has been met in most instances by better service and at less cost per unit of equal value than has been possible in tax-supported hospitals under the prevailing conditions of civil government.

The main feature of professional concern is that of standards of performance created by medical and hospital organizations and a quality of supervision of care of patients which reduces to a minimum the exploitation of the sick or their irresponsible treatment by persons and methods not accepted by the best qualified persons in the professional groups concerned. I refer particularly to the standards established by the American College of Surgeons, the American Medical Association, the American Hospital Association and by the national specialty boards and associations, as for obstetrics, pediatrics, etc.

The safeguards created within the institutions for the sick by the organized medical boards recognized by the Trustees as responsible for medical policies and performance are of the same general nature and for the same purpose, to assure for the patients the product of the best group thought and skill.

Similarly in the field of public health the standards of performance and method developed by independent professional bodies have dominated the conduct of official services and saved them from the easy deterioration of bureaucracy.

There are the priceless assets of voluntary, uncon-

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trolled and uncontrollable private or individual and collective professional and social initiative and responsibility.

On the economic and political front there are serious threats, perhaps the inevitable accompaniments of a restlessness due to the unemployment and commercial distress of the depression period.

The answer to the economic instability of support of voluntary hospitals and similar institutions has been the development of voluntary hospital service associations.

The proposal of government has been compulsory sickness insurance schemes. I warn you to be alert to the implications of any federal proposal to dominate the field of medical care under whatever name it may be camouflaged.

There is no such thing as health insurance. Sickness, not health, is insurable within certain limits.

Since 1933 several proposals have been made with a view to bringing the services of medicine to more of our people by the use of federal authority and the persuasive argument of federal subsidy. No proposal so far made by the Congress or by boards or other federal agencies has been acceptable to the professions, the institutions, or the public primarily concerned.

I warn you to be prepared, to be informed, to be critical, to be well represented when the next and succeeding schemes are offered which fail to preserve those features of the existing agencies, institutions and professional services which have achieved such eminent success by the methods of the past.

When I say success, permit me to qualify that to this extent. Perfection has not been attained. Even and equitable distribution of services and costs has not been achieved. We know now more than we have applied. We can do more than we have done to determine the nature and provide treatment for the sick.

And yet, looking about the pre-war world we note the relative excellence, yes, superiority of accomplishment in prevention and care of sickness in this country when compared with that available for any comparable population known to human history.

We face no crisis of disease, no threat of calculable or preventable illness. We are entitled to the consideration of society because we have done reasonably well so far and wish to progress in the manner of free and independent people and not according to some pattern proposed by persons who have not carried the burden of personal responsibility for the life and death of their fellow men in sickness, and to be imposed by law to correct some inadequacy due to economic causes, and not to the public institutions which have been the product of the best thought and effort of disinterested persons over the past hundred years and more.

In closing let me express my confidence in the essential soundness and approximate adequacy of the present structure of administrative medicine in the United States and my conviction that present errors of form, standards and performance can be better, more quickly and more economically corrected by forces now operating among the institutions and professions concerned than by the means of federal domination by its authority or by the use of tax resources.

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IMPRESSIONS OF DIET AND DISEASE IN KOREA

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At a time when faulty nutrition as a cause of disease is receiving an increasing amount of attention, it may be of interest to the profession to learn that certain diseases of possible dietary origin common in this country are rare in a primitive country like Korea. I have checked my impressions of thirty-three years' practice at Soochun, Korea, with eight physicians of my acquaintance, all of whom had long experience in various parts of that country. The replies are condensed in Table 1.

The diet of Koreans in general, and especially at Soochun, which is located on the coast of the Yellow Sea, consists chiefly of unpolished rice boiled in unsalted water, and boiled barley. However, with each mouthful of rice or barley they eat a spoonful of their native pickle, *kimchy,* which is used throughout Korea, Japan, China, and elsewhere. This pickle consists of the raw vegetables,

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turnips, cabbage, and hot red pepper, seasoned with garlic and salt. This undergoes a fermentation after standing a month or so, but it is considered to improve with age. Its odor becomes so strong that it is kept out of doors until the time of eating. The common foods are the following: rice, barley, vegetables, beans and peas of many varieties, spaghetti, egg plant, wild grasses, sesame seed, fish, bean curd, etc.

The cow is used chiefly for plowing and only within recent years has milk been used at all. Even now in our hospitals the safest and best milk is made from soy beans and answers every need for the baby. It is difficult to train the Korean how properly to use cow's milk, as the fly is such a common means of spreading dysentery. Besides, the above foods, for feasts, funerals, special occasions and those able to afford it the following also are eaten: beef, pork, eggs, bamboo sprouts, melons, celery (grown in water), barley candy, persimmons, chestnuts, pine nuts, potatoes, and many other things. While in recent years Korea has become a great fruit country, formerly there were few fruits except the persimmon and poor quality pears and berries. Dr. S. K. Oh, president of Severance Medical School in Korea, related how in former times when a mother died the only baby saved was that fed by the father who first chewed raw rice and gave it to the baby, the saliva of the father making starch digestion possible.

Dog meat can be bought in almost any market and is used more by the poor and as medicine. Where we use lard, they use sesame oil. While some pork is used by the Korean, it is used a great deal by the northern Chinese. In addition, they eat the soy bean in various ways. The most common form is that of a salty sauce quite similar to our Worcester sauce, called *chang* in Korean, *shoyu* in Japanese and *jangyu* in Chinese. It is pleasant to taste and is their universal seasoning where salt is needed. Almost every portion of food is dipped into this sauce before eating. *Soy bean sprouts* form an important part of their diet the year around. The dried beans are placed in wet ashes in a warm room, and in two or three days the sprouts appear. These are boiled, seasoned and quite tender and delicious. This means that a fresh sprouted vegetable can be had any day in the year regardless of the depth of the snow.

There are two very common soups, one being that of fish and the other of vegetables. Most any cabbage leaf, turnip or other vegetable that can be secured is boiled, sometimes with a fish head or small piece of other meat for flavoring.

Seafood is a popular dish. Korea has a long coastline and is much like the shape of Florida. When the tide recedes one can see women and children by fifties and hundreds wading out into the muddy beaches to gather such things as snails, oysters, crustaceans and sea "varmints" of a hundred varieties. These are usually cooked or boiled with some soup or served in small portions with each bowl of rice. About a tablespoonful is the usual helping but around each bowl of rice may be four or five of these small helpings. So the poorest people with a little barley or rice can eat relatively luxuriously with these masses of food gathered from the muddy and sandy beaches as well as from the streams and fields. *Seaweed* is commonly eaten, after being dried into thin sheets, dipped in sesame oil and then salted and toasted. This truly tasteful dish is undoubtedly a rich source of iodine.

The very poor will even partake of raw fish intestines, there being such a craving for meat. A woman once came to our hospital with a fish line hanging from her mouth. She reported that after eating some fish guts she discovered a string in her mouth, and pulling it back from her stomach found it caught. It was a fish hook and line which had been in the fish gut, and the x-ray showed the hook caught in her stomach, necessitating removal by operation. Girls of the silk factories often eat the silk worms which have been boiled in the cocoon to release the silk. These dipped in salt or bean sauce would probably be edible when one is very hungry.

The hot, fresh blood of deer, boar and other wild animals is valued highly in debility or impotence, but this is not universal enough to have much influence on the masses. In recent years we in America have been keen on liver in anemias, but for thousands of years the Koreans have eaten much liver. In their case, it is often dog liver sausage, made of dogs' liver and blood.

Practically no sugar is used, even in tea, and only occasionally will some barley candy be obtained.

One important aspect of their nutrition problem is the scarcity of fuel; as a result they use very little water in cooking and cook all foods for the least time possible. When food is slightly cooked, instead

of removing it from the fire as we do, they rake the fire away from the food and put it out to save the remaining fuel. Some lessons we can learn from this ancient people are quick cooking of vegetables, use of more sea foods, less sugar, and most of all the famous vegetable pickle, which means a spoonful of raw vegetable with each mouthful of food three times a day the year round.

Following is a discussion of the incidence of the various diseases listed in Table 1 with a few additional ones, together with an attempt to explain the findings.

GOITER.—Cystic and exophthalmic goiter are quite rare, only one person reporting it as common. Others report seeing "two or three cases a year." The ingestion of sea food, such as fish and seaweed, plus proximity to the sea with a resulting high iodine content of the soil is undoubtedly the reason for the low incidence of the cystic type. Dr. Power, located inland from the sea, reports seeing much simple goiter. During my stay I saw one case of exophthalmic goiter.

PELLAGRA.—This disease is relatively rare; only two reported it as common. In my colony of 700 lepers (receiving an institutional diet), a pellagroid condition with red rash on the neck and wrists and some stomatitis, would break out each spring, when the native pickle supply ran low. I was on the lookout for pellagra, and found it is rare among the non-leper cases. Dr. Oh, a dermatologist teaching in the Severance Medical School, states pellagra to be rare in Korea. This might be explained by the fact that raw cabbage eaten in their pickle is rated as fair source of nicotinic acid.

RICKETS is also very rare, and, off-hand, this would appear strange, as they are a poor people and their diet consists chiefly of rice and barley. While interning in New York, I noted that one of our then common operations was the correcting of bone deformities due to rickets. I was anxious to try out these operations, but not once in thirty-three years did I find a case of bow legs among the Koreans needing such correction. The rarity of this condition can be easily explained by the fact that the children go naked so much; even in the winter children may be seen playing naked in the sunshine, and every person remains tanned throughout the year. The climate of South Korea is mild, about that of South Carolina, and there is usually a six-weeks rainy season in June and July. The summer is hot and humidity is high, but fall and spring are delightful. In addition, the ingestion of fish viscera, including the liver, as well as the eating of dog's liver, would supply vitamin D to their diet

TABES DORSALIS.—Although not of dietary concern, it is of interest that while syphilis is as common as the common cold, that of the nervous system seems to be rare, and I do not recall seeing one case of tabes. I have been told that tabes is seen often in the ports where foreign syphilis has been brought in.

ESSENTIAL HYPERTENSION is quite low there as compared to this country. I have no explanation beyond the fact that they do not experience the high speed, high tension and fast life of this country. They are a quiet, easy-going people, who sleep a great deal; crops are made without too much strain and effort, and they usually do tomorrow what they can get out of doing today. There is, of course, hypertension in the nephritics, aged, etc. Could their abundant supply of vitamins partly account for this in addition to the lack of mental tension? Less worry, anxiety and mental strain probably plays a great part in this.

PERNICIOUS ANEMIA also is quite rare, for which I have no explanation. Secondary anemias are quite common, most often from such diseases as hookworm, pulmonary distomiasis and tuberculosis.

OBESITY in children is exceedingly rare. This would indicate proper functioning of the endocrines, associated with the rarity of thyroid disturbances. The one doctor who stated it was common probably had the question of old men in mind, as we do see the stout later on in life.

OSTEOMALACIA is very common in certain sections of China, but is rare in Korea. This is probably because the Korean women work out of doors the year round and obtain adequate vitamin D, as well as calcium and phosphorus from sea food.

SCURVY.—I do not recall having seen a case of scurvy in Korea; the raw pickle and bean sprouts the year around, combined with quick cooking, undoubtedly furnish adequate ascorbic acid, since cabbage is a rich source of this vitamin.

DIABETES MELLITUS.—The rarity of this condition might well be associated with the lack of obesity, relative scarcity of food, and the fact that sugar and sweets are little used.

GOUT.—Dr. Hirst states that his one case was in the old Korean king, and Dr. Lowe states that his

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single case was in the wealthiest man in the province.

BERI-BERI is very common among the Japanese who use much polished rice, but it is not nearly so common among the Koreans who use barley and rice with much of the husk. Since the war with China the government has enforced a law requiring that the food be half rice and half barley.

DENTAL CARIES are rare in young people, though common in those past fifty. Our American dentists have marveled at the beautiful white teeth of the Korean, who uses little sugar and evidently has a good supply of calcium and vitamin D. In cleaning their teeth the Koreans place salt on their finger and massage the teeth and gums each morning; no brush is used. This massage is a good thing. On trips to the country we extracted hundreds of decayed teeth, more often in the aged people.

ARTHRITIS, rheumatic and deformans, is not nearly so common there as here, and their diet may play some part in this. The recent popularity of chaulmoogra oil in arthritis started from the observation that no arthritis is seen in leper colonies and chaulmoogra oil might be the cause. Rheumatic fever is rare among the Koreans, but common in American children in Korea.

No signs of axerophthol (A) deficiency were ever noted by me. Nyctalopia is fairly common, although I do not know if it is due to a dietary deficiency. It is interesting, though, that the untrained native "doctors" prescribe the liver of crows and magpies for weak vision.

CONSTIPATION is not an important problem, as they eat so many vegetables and coarse foods, besides walking a great deal. It is no uncommon thing for a person to walk 5 or 10 miles to market every 5 days. Fast eating and bolting of the food is a common error; indigestion and stomach ulcers are the results.

While *sprue* is seen among foreigners, it is seldom seen among the natives. Most of our sprue cases have followed long chronic cases of dysentery, and in recent years when dysentery was treated early there have been no sprue cases in our section.

NOMA is a common and most distressing condition which I suppose is due to an acute deficiency, usually following measles. I have always felt that this was due to improper feeding and poor sanitation of the mouth after these attacks of measles.

EUNUCHS are rather common, for in leprosy and tuberculosis there is often atrophy of the testes. Again, dogs, in licking feces from the naked babies, often bite out the testes. I have had many such cases brought to me. Occasionally castration is done for punishment.

TABLE I

OPINION OF NINE DOCTORS ON THE FOLLOWING DISEASES

DISEASE	COMMON	RARE	NEVER SEEN
Goiter	2	5	2
Pellagra	2	3	3
Rickets	2	5	2
Tabes	-	3	6
Essential Hypotension	-	6	3
Pernicious Anemia	-	6	3
Obesity	1	3	5
Osteomalacia	-	4	5
Scurvy	-	2	7
Diabetes	-	8	1
Gout	-	2	7

The doctors making these reports lived in different sections of Korea, so the further interior the less sea food. I am a bit surprised that two each report goiter, rickets and pellagra as common. The other eight condition reports show much the same opinion; rare or not seen. Pot belly in children is very common and one doctor based his diagnosis of rickets on this feature. This is due, I feel, to the large amounts of course foods taken, about a quart of rice being the usual quantity for one individual, besides the vegetables.

I am indebted to Professor R. J. Main of the Medical College of Virginia for suggestions and criticisms of this report, as well as to the following doctors from Korea who gave their opinions from memory: Dr. J. M. Rogers; Dr. L. K. Boggs; Dr. J. W. Hirst; Dr. J. S. Wilson; Dr. D. B. Avison; Dr. J. F. Preston; Dr. W. P. Gilmer; and Dr. Lowe.

CONCLUSIONS

I believe that the rarity of certain deficiency diseases, so common in this country, is due to such factors as the abundance of raw vegetable pickle eaten by Koreans as well as the partaking freely of sea foods, sea weeds, and soy beans, the good exposure of their bodies to sunlight, and short cooking.

RESULTS OF KOLMER COMPLEMENT FIXATION TESTS ON SPINAL FLUIDS WITH AND WITHOUT THE ADDITION OF EGG ALBUMIN TO THE COMPLEMENT

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It has been found that complement fixation tests for syphilis employing ice box incubation frequently give non-specific reactions with spinal fluids.

This phenomenon was first observed in quantitative tests with serum. Frequently the first two tubes carrying 0.2 cc. or 0.1 cc. of negative serum would show complete hemolysis, whereas, the following tubes carrying smaller amounts of serum would give a one, two, or four plus reaction. Serum controls carrying no antigen always showed complete hemolysis. The antigen control would either show partial or complete inhibition of hemolysis. These zonal reactions are peculiar to spinal fluids even though other findings, such as collodial gold curve, cell count, and protein content are normal. Giordano and Carlson[1] have advanced the theeory that the sera of some guinea pigs contain a substance which fixes complement in the presence of antigen at 6° to 10° C. This substance is heat stable and shows no inhibition of hemolysis at 37° C., the temperature at which a Kolmer complement titration is subjected for one hour.

The simplified Kolmer complement fixation test employing a single dose of 0.2 cc. or 0.1 cc. of serum is not subject to these false positive reactions. As reported by Kolmer,[2] the proteins or other collodial factors contained in 0.2 cc or 0.1 cc. of serum may prevent non-specific results. Spinal fluids, however, in a dose of 0.5 cc. may be lacking in that protection, the results being false positive.

Boerner and Lukens[3] have devised a method whereby a solution of egg albumin in saline may be added to spinal fluid tests as a protective protein. Kolmer has given his approval and recommends diluting complement for testing spinal fluids with a 10 per cent solution of egg albumin in 0.85 per cent sodium chloride.

Giordano and Carlson[1] and Harris[4] have discovered that serum from some guinea pigs will give a zonal reaction with one Kolmer antigen, while with another Kolmer antigen there will be complete hemolysis in the antigen control. Harris has reported a method whereby each guinea pig to be used as a source of complement should be given a trial bleeding and the serum pre-tested with the antigen to be employed in the tests. In this manner zonal reactions or false positives with spinal fluids may be eliminated.

A laboratory conducting serologic tests on more than a thousand bloods and spinal fluids per day finds it almost impossible to pre-test serum from each guinea pig used for complement.

The Laboratory of the Virginia State Department of Health since July, 1941, has examined 2,331 specimens of spinal fluid both with and without 10 per cent egg albumin. Spinal fluids yielding a positive reaction with egg albumin numbered 615. The number giving positive reactions without egg albumin but negative with egg albumin was 1,530. Forty-nine specimens gave anti-complementary reactions with egg albumin compared to 137 anti-complementary reactions with plain complement.

The majority of spinal fluids examined were from patients in insane and penal institutions. Complete histories were obtained on a small number of patients. Results of spinal fluid complement fixation tests from these patients with 10 per cent egg albumin complement were in complete agreement with histories.

"The mechanism[2] of these non-specific reactions is unknown, but they appear to be due to the presence in the sera of some guinea pigs of a substance fixing complement with antigen, or to obscure changes in the sera of some animals rendering their complement unduly sensitive to the occult inactivating effects of antigen."

SUMMARY

False positive reactions are encountered frequently in complement fixation tests with spinal fluids for evidence of syphilis.

A lack of sufficient protein suggests itself as a possible factor in the causation of these false reactions.

Egg albumin has been found to be a very satisfactory substitute for the protein deficiency.

Anti-complementary reactions, in some instances, are also inhibited by the addition of egg albumin.

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CASE REPORT OF MATERNAL DEATH

MATERNAL HEALTH COMMITTEE
MEDICAL SOCIETY OF VIRGINIA

This woman was thirty-six years old, white, and approximately seven months pregnant. One pregnancy five years ago, resulted in an abortion after three and one-half months. Twelve years before, radium, dosage unknown to us, had been used for uterine bleeding. She had been seen by a physician early in this pregnancy but no pelvic examination was made. The physician who saw her about two weeks before her admission stated that her blood pressure was normal. When first seen by physician number three, the blood pressure was 180/110. General edema was present and the color of the skin was suggestive of nephritis. The uterus was the size of a seven months pregnancy, with the fetus in a transverse presentation. The head was in the right iliac fossa. The patient was admitted to a hospital for the treatment of toxemia. The day following admission, the membranes ruptured spontaneously and the cord prolapsed. When seen after this, the cord was not pulsating. An x-ray picture confirmed the position of the fetus. A vaginal examination showed the cervix very high, long and indurated. In view of the toxemia and the dead baby it was decided to induce labor by the insertion of a bag. The cervix was very difficult to bring down, and a small bag was inserted with difficulty. This gave some dilatation and the next day a larger bag was inserted. This came out after another twenty-four hours. The baby was delivered by bringing the feet down. The hand passed into the uterus at this time showed a rupture of the uterus around the edges of a fibroid tumor four or five inches in diameter in the lower segment. Under evipal anesthesia a hysterectomy was done at once. Sulfanilamide was placed in the wound. A drain was inserted and brought out through the vagina. A transfusion was given following which her condition seemed satisfactory and continued to improve for two days. On the third day she developed evidence of peritonitis and died rather suddenly. Autopsy showed several areas of peritonitis with small pockets of pus formation. The diagnosis was toxemia, ruptured uterus, fibromyoma of the uterus, and peritonitis.

COMMENT

This case was classified as a preventable obstetrical death and charged to prenatal care of poor quality and error on the part of the physician in selecting the type of delivery. The patient though toxic did not die of toxemia, although it was no doubt a contributing cause. She did not die directly of the hysterectomy but secondarily from infection. If the operation had been done earlier it seems reasonable to assume that this infection would not have occurred and consequently the death would have been prevented. The lack of efficient prenatal care plays an important part. A pelvic examination in early pregnancy should have shown the presence of the fibroid in the lower segment, a condition which is rather difficult to detect in later pregnancy. This fibroid was not recognized at the time the plan of delivery was selected. The high, long and tight cervix even without the presence of the fibroid should have given warning that a bag would probably not be satis-

factory. One member of the committee expressed the opinion that no active interference should have been done but the labor left to nature. This thought certainly deserves consideration. The danger of this course is that the labor would have been long delayed, infection encouraged and an impacted shoulder probably resulted. This of itself is a major obstetrical problem and in the presence of a fibroid sharing the pelvis, probably would not have saved the patient. Fibroid tissue does not dilate. It is possible that the delayed effect of radium on the cervix should have been considered. At present we view this case in retrospect and it looks very different from the picture seen by her physician before labor. In retrospect, Cesarean section and hysterectomy immediately following rupture of the membranes and prolapse of the cord, would have offered this individual a better chance of survival. It is hoped that discussion of it may he helpful to those who may meet a similar situation. This case calls attention to the dangers of the wrong use of bags, as well as the hazards of fibroid tumors in the lower segment of the uterus complicating labor and the penalty for the failure to make a correct diagnosis. It also illustrates the advantages of a complete examination during the early months of pregnancy.

MENTAL HYGIENE NOTES

Neuropsychiatric Society of Virginia.

The winter meeting of the Neuropsychiatric Society of Virginia was called to order at the Richmond Academy of Medicine Building by the President, Dr. Howard R. Masters, Richmond, on February 16th. Other officers were Dr. Edward H. Williams, Richmond, vice-president, and Dr. Joseph R. Blalock, Marion, secretary.

The first paper was that of Dr. R. Finley Gayle, Jr., of Richmond, entitled "Guillain-Barré Syndrome—A Case Report". The paper was read by Dr. Dale Groom, Resident in Neuropsychiatry at the Medical College of Virginia Hospital. A comprehensive review of the literature was made. Onset is usually acute with progressive motor involvement with flaccid paralysis of the peripherical type, primarily ascending, and with sensory disturbances.

A characteristic feature is a normal spinal fluid cell count with an increase in the spinal fluid protein. The usual outcome is recovery.

The case presented was five years of age, showed the usual features, and the usual progression towards recovery. Because of the pain and because of the question of poliomyelitis on admission the Kenny treatment was used.

The presentation was discussed by Drs. Riese, Gayle, Blalock, and Wilson. Dr. Riese pointed out that the syndrome was a clinical entity, not a neuropathological one, and that we should stick to the original clinical description of Guillain-Barré.

The next paper "A Prelimianry Report of the Study of 200 Autopsies at Eastern State Hospital with Special Emphasis on Neuropathology and Brain Tumor in Old Age," was read in two parts, the first on general considerations by Dr. I. Zfass of Williamsburg, and the second on the brain tumor series and case reports by Dr. Walther Riese of Richmond.

Dr. Zfass reported an autopsy rate of 45 per cent at Eastern State Hospital for 742 deaths. On lantern slides he gave tables for age distribution, psychiatric and anatomical diagnoses. Carefully tabulated weights of organs confirmed N. D. C. Lewis constitutional studies indicating smaller weight in the hebephrenic group as compared with the paranoid-compensatory groups.

In case reports Dr. Riese presented slides showing neuropathological changes in three seniles who were found to have brain tumors.

In the discussion Drs. Brown, Barrett, Wilson, and Zfass participated.

The third paper was presented by Dr. James K. Hall, Richmond, Past President of the American Psychiatric Association, on the subject "Occupational Therapy." Dr. Hall's approach was from the standpoint of energy.

Energy and matter (that which occupies space) are used and re-used. Energy disorders appear in symptoms, and we have the job of wooing energy back to its proper fields. The structure of the

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psyche embraces all immaterial parts of the individual. Man's psychic energy is constantly at work. Freud's "libido" really refers to psychic energy. In a psychosis one is out of harmony with the world without; in a psychoneurosis he is living out of harmony with himself. One of the functions of occupational therapy is to restore the patient to the utilization of wholesome energy. Man insists on self-expression and this has to be released through energy. Proper and adequate outlets are necessary. Occupational therapy provides these. Inactivity carries deterioration with it. W. A. White said: "Good is not accomplished so much by 'work' but as a means of bringing the patient and therapist together—i. e., psychotherapy."

The paper was discussed by Drs. Tucker, Wilson, Henry, and Hall.

The closing paper was read by Dr. Beverley R. Tucker, of Richmond, entitled "Emotions and the Fear Reaction on the Home Front." Dr. Tucker's viewpoint was that due to hypo development of the hypothalamus there may result emotional disturbances such as mood swings, restlessness, blood pressure changes, and fear reactions, and he postulates on "hypothalmic fear syndrome."

Fear is a more powerful emotion than love. Fear is more powerful on the home front than among the armed forces. There were far fewer mental disturbances among the psychoneurotics during the bombing of London than was anticipated. The insecure, the propagandized tend to give way more. Dr. Tucker went on to stress the importance of telling people in general the truth about the past, present, and future. This will tend to reduce the unnecessarily large number on the home front who may show fear reactions, reactions not necessarily constituting a psychosis, but that are disrupting.

The paper was discussed by Drs. Wilson, Gayle, Blalock, Redwood, Masters, and Tucker.

New officers elected are: Dr. Joseph R. Blalock, Marion, president; Dr. O. B. Darden, Richmond, vice-president; and Dr. James Asa Shield, Richmond, secretary-treasurer.

Public Health

I. C. RIGGIN, M.D.,
State Health Commissioner of Virginia

The report of the Bureau of Communicable Diseases of the State Department of Health for January, 1943, compared with the same month in 1942, follows:

	January 1943	January 1942
Typhoid and Paratyphoid Fever	16	31
Diarrhea and Dysentery	95	119
Measles	417	844
Scarlet Fever	265	195
Diphtheria	57	71
Poliomyelitis	5	0
Meningitis	94	17
Undulent Fever	3	2
Rocky Mountain Spotted Fever	0	0
Tularemia	16	12

PELLAGRA*

Clinical pellagra indicates an advanced breakdown in nutrition. For every clinical pellagra case, it is estimated there are from twenty to one hundred with varying states of inadequate nutrition. The true incidence of pellagra appears to be underestimated. This is due in part to failure to suspect, to recognize, and to report cases. Shifting emphasis toward the early signs of deficiency has revealed a higher incidence than was formerly suspected.

Pellagra is classified as endemic, alcoholic or secondary depending on the chief cause of the vitamin deficiency. Among the endemic are included those in which food fads, idiosyncrasies, such as vegetarianism, and some ill-advised therapeutic diets figure as well as those in which it had not been possible to obtain proper food.

In alcoholic pellagra, the vitamin wants have not been satisfied because the beverage alcohol, the chief source of calories, ordinarily contains no vitamins and the diet does not make up the deficit.

The term secondary pellagra included cases in which the diet, satisfactory for the ordinary requirements of health, is inadequate when some disease obstructs the intake, accelerates the loss or raises the needs for the vitamin rich foods. The resulting pellagra is the same whatever the origin.

A large intake of corn or wheat grits increases

*A number of Virginia physicians requested the State Health Department's viewpoint on pellagra. It has been suggested that this information may be of some value to other members of the profession to whom it was not sent direct.

the requirement of the anti-pellagra factor. These vegetable proteins require the pellagra preventive factor for their proper utilization.

It appears on the basis of the evidence now available that the action of sunlight in pellagra is to be regarded as that of an irritant and pellagrins should be protected from exposure to actinic rays and skin irritants of all kinds.

PREVENTION:

Pellagra can be prevented by eating enough foods containing the components of vitamin B, especially the factor known as niacin or nicotinic acid (not nicotine). This is called the anti-pellagra factor. Secondary deficiencies of thiamin hydrochloride and riboflavin are also likely to occur.

Some of the best sources of niacin are: liver, muscular meats, including chicken and rabbit; fish, egg yolk, collards, kale and turnip greens, tomatoes, peanut butter and peanut meal, wheat germ, brown rice, yeast, and dried beans. Meat products contain more niacin usually than foodstuffs of plant origin.

Recurrence can be prevented only through a permanent change in the dietary habits of the pellagrin by prescribing the addition of the pellagra preventive foods to the diet. Permanent control can be obtained only by bringing about permanent changes in dietary habits.

TREATMENT OF PELLAGRA, ESSENTIAL POINTS:

1. *Nicotinic acid orally or parenterally as indicated*—in sufficient dosage to relieve acute symptoms. The chief index to dosage is the state of objective manifestations and the patient's complaints.

Pellagra is rarely a monoavitaminosis. Pellagrous manifestations of the gastro-intestinal tract, of the skin and of the nervous system yield rapidly to treatment with nicotinic acid, but the general weakness and anemia require simultaneous administration of other factors of the B complex in the form of yeast and liver extract.

The daily dose of nicotinic acid or nicotinic acid amide is between 100 and 1000 mg. It has proved advantageous to give 60-125 mg. four times daily by mouth.

2. *Other members of the B complex*—probably 50 mg. riboflavin each day.

3. *Liver extracts*—either orally or parenterally, in very large doses in the severe cases.

4. *Yeast*—not less than 30 grams and up to 200 grams or more daily of pure dried powdered yeast, depending upon the severity of the attack.

5. *A diet of 3,000 to 4,000 calories or more daily,* containing lean meats, liver, milk and other foods rich in the pellagra preventive factor.

6. *Feeding at frequent intervals,* and careful individual nursing in order to see that the patient actually eats and retains the large amounts of food necessary.

GROSS EVIDENCES OF MALNUTRITION

NICOTINIC ACID AND RIBOFLAVIN DEFICIENCIES

SYSTEM	FINDING	SUGGESTED DEFICIENCY SYNDROME
Mucous membrane	Scarlet red stomatitis with or without secondary infection	Nictonic acid
	Magenta glossitis (Red inflammation of the tongue)	Riboflavin
	Atrophic glossitis	Nicotinic acid, B complex, Addisonian anemia, Plummer-Vinson syndrome
	Cheilosis (Lesions on lips and angles of mouth)	Riboflavin
Skin	Nonspecific urethritis, balanitis, vaginitis, pellagrous dermatitis	Nicotinic acid
	Seborrheic lesions in nasolabial folds on face, behind ears and in skin folds. Fissures in angles of mouth.	Riboflavin
Neurologic	Nicotinic acid deficiency encephalopathy	Nicotinic acid
	Progressive stupor and hebetude Certain organic reaction psychoses	Nicotinic acid, thiamin and B complex
General	Underweight, underheight, edema and pallor	Calories, protein, iron, B complex

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The Council Medical Society of Virginia

The winter meeting of the Council of the Medical Society of Virginia was held at the Society's office in Richmond on January 22, 1943, with the President, Dr. J. M. Emmett, of Clifton Forge, presiding. Others present were: Dr. C. B. Bowyer, President-Elect; Drs. W. L. Powell and Waverly R. Payne, Vice-Presidents; Drs. J. L. Rawls, J. L. Hamner, Alex F. Robertson, Jr., H. B. Mulholland, and W. C. Caudill, Councilors; Dr. M. Pierce Rucker, Editor; Dr. I. C. Riggin, State Health Commissioner; Dr. Frank S. Johns, Chairman of the Legislative Committee; Dr. Hugh H. Trout, Chairman of the Procurement and Assignment Service for Virginia; and the Secretary.

Dr. Johns explained in detail the work of the Legislative Committee and stated that his Committee would need the full co-operation of all the members of the Society. He explained that at the last General Assembly a Commission was formed known as the Healing Arts Commission. The function of this body was to investigate and study the licensing of chiropractors and other kindred healers. Dr. Johns stated that a meeting of the Healing Arts Commission had been called for January 28th with a public session at which time this Commission would hear representatives of all groups interested. He felt that as many doctors as possible should be present for this hearing. Dr. Alex Robertson suggested that he thought it would be well to have representatives from the two Medical Schools in the State present at the hearing. Dr. Johns further advised the Legislative Committee that Mr. J. W. Holloway of the Bureau of Legal Medicine and Legislation of the American Medical Association would be in Richmond on January 28th to offer any advice which was required to the Committee prior to the public hearing of the Healing Arts Commission.

Dr. Caudill then offered a motion which was seconded and carried that the Council would support Dr. Johns and his Committee in their program.

In the discussion which followed it was explained that the Legislative Committee planned to secure the services of a publicity representative to go throughout the State and contact the doctors and address other interested groups on subjects of interest to the Medical Society of Virginia.

It was moved by Dr. Robertson and passed that the Secretary write Dr. Holland expressing sympathy from the Council in the loss of his wife and regret at his own illness.

Dr. Trout was asked for a report on his work of Procurement and Assignment of Physicians, and Dr. Trout stated that Virginia doctors had responded so splendidly that probably no more doctors should be needed during 1943. He said that there was no cause for alarm on account of the shortage of physicians in civilian communities. Dr. Trout stated that in an emergency there were enough Public Health Service men available to come into the State to do such private practice as might be assigned.

Dr. Payne of Newport News said he thought the trouble reported from his city emanated from laymen rather than doctors and the shortage of physicians reported there was due to the fact that they excluded specialists in their summary. Dr. Payne stated that the doctors of Newport News were very busy, but that they could continue to carry the medical requirements there.

The next business was action on the minutes of the meeting of the Council held in October, and these were approved as printed in the December MONTHLY.

Dr. Emmett announced that he had appointed Drs. Hutcheson and Rawls to serve with him as the Budget Committee of the Council.

Dr. W. T. Sanger, President of the Medical College of Virginia, and Dr. J. P. Gray, Dean of the Medical School, were presented at this time and Dr. Sanger said he wished to make a report for the information of the Council in regard to a proposed merger of the Medical Department of the University of West Virginia with the Medical College of Virginia. This plan is to enable students from the former school to take their last two years in Richmond, it not being expedient at this time to develop the West Virginia school into a four year school. This plan would be in conformity with the idea of bringing groups of states together in "educational

tie-ups". West Virginia is to turn over to Virginia a certain amount of money each year for the purpose, but the plan will in no way reduce the number of students from Virginia. No additional buildings will be required, but there would have to be additions to the clinical staff. If the two Virginians develop some satisfactory program, it should be helpful to both states. The final decision in this matter will be made by the Board of Visitors of the Medical College of Virginia, the Governor of Virginia, the Legislature of West Virginia and the Governor of West Virginia. Dr. Sanger emphaticaly stated that this movement was only in the planning stage and it had taken no definite form nor had any commitments been made.

The next question for consideration was the selection of a place and the dates for the 1943 meeting of the Society. Motion was offered by Dr. Robertson and seconded by Dr. Mulholland that the next meeting be in Roanoke with the request that the Roanoke Academy of Medicine be asked to arrange no entertainment. Dr. Powell said that all the expenses of the last meeting were paid for by money collected from commercial exhibits and he presumed there would be no objection to continuing that plan. The motion, with Dr. Powell's suggestion, was adopted and he was asked to find out from Hotel Roanoke if they could take care of the meeting in the week commencing October 4 or October 11, preferably the latter.

The following resolution adopted by the Maternal Health Committee at its meeting on December 4th was read:

RESOLVED, That the wives and infants of the enlisted personnel of the armed forces be hospitalized under the same plan as is now being used by the State Department of Health for medically indigent maternity and infant patients with pathology.

Dr. Rucker, as a member of the Committee, was asked if he would explain the resolution and said that some states were giving hospitalization to the wives and infants of the enlisted personnel without consideration of their financial status, but Dr. Rucker would like for Dr. Riggin to speak on the subject. Dr. Riggin explained that the funds for hospitalizing these women come from the Children's Bureau and Department of Labor, supplementing those of the Health Department. As many people are able to pay for such service, he thought each such case should be investigated and given free service only upon the recommendation of a physician. If this is not done, anyone could make application. If there is no physician to report, the Department of Public Welfare will make necessary investigation. Personally, he stated, he would like to support the resolution from the Maternal Health Committee and hoped the Council would approve it, as hospitalization will be given these cases where needed. This motion was then duly approved.

In accordance with a request from the American Medical Association in December, it was voted to change the name of the Medical Preparedness Committee to the War Participation Committee. The suggestion was made that State Medical Societies cooperate with the State Procurement and Assignment Service and with the State Boards of Registration in plans for providing medical service in areas in distress for lack of doctors. Dr. Trout of the Procurement and Assignment Service stated that he was satisfied with the situation in Virginia at this time.

A letter was read from the National Conference on Medical Service in which it was stated that they felt medicine should be better represented in Washington and there should be a permanent office there, adequately manned, that they might furnish reliable information about health to bureaus, congressmen, senators, and the doctors back home. It was the consensus of opinion that it would be well to have such an office in Washington and it should be established by the American Medical Association. Motion made to this effect was adopted.

Dr. Emmett said it has been brought to his attention that there is a very great need for a larger number of private duty nurses, and he had been asked by the Nurses Association to get the doctors to stimulate interest on the part of young women in the State to go into training, with the certainty that there will be continued employment. He hoped the doctors would cooperate in this.

A letter was read from Dr. E. P. Lehman, Director of the Virginia Cancer Foundation, in which he referred to a question he mentioned to the Council in Roanoke as to their reaction towards a gift by the Virginia Cancer Foundation for the purpose of a statewide postgraduate study in the diagnosis and treatment of cancer, this to be administered by the Department of Clinical and Medical Education of the Society. While the Foundation took no action

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on this at its recent meeting, there was considerable interest in the suggestion, and it seemed quite possible that they will appropriate $5,000.00 to employ an instructor to conduct cancer courses as outlined, after Virginia physicians return from war. A motion was then offered that the Council recognizes the need for postgraduate education on recent advances in the diagnosis and treatment of cancer throughout the State of Virginia and that it would welcome a gift of money which would make such a course possible after the war, this, when put into effect, to be supervised by the Department of Clinical and Medical Education of the Society.

There being no further business, the meeting adjourned.

AGNES V. EDWARDS,
Secretary.

Approved:
J. M. EMMETT,
President.

Woman's Auxiliary
to the
Medical Society of Virginia

President—MRS. H. W. ROGERS, Norfolk.
President-Elect—MRS. W. CLYDE WEST, Alexandria.
Recording Secretary—MRS. C. C. SMITH, Norfolk.
Corresponding Secretary—MRS. ALBERT G. HORTON, Norfolk.
Treasurer—MRS. REUBEN F. SIMMS, Richmond.
Chairman, Press and Publicity—MRS. C. E. ARNETTE, Alexandria.

In Memoriam, Mrs. Griffin W. Holland.

Our hearts are saddened as we pause in the process of our Executive Board meeting to pay a tribute of love and appreciation for the friendship, loyalty, and help to our Auxiliary as rendered by our friend and member, Mrs. Grace Wilkins Holland, whose passing we mourn. We feel it was largely through the efforts, interest and an appreciation for its need that the Northampton-Accomac Auxiliary was organized. She loved it next to her church work, both of which she loved with that untiring devotion of which she was noted in all her various activities. "Grace Darling," as I affectionately called her, was one of the purest, sweetest, truest friends I ever knew and I feel my life, as I am sure you feel, has been enriched by the contacts with her simple, sweet personality. With no "make up" on her face, no "put on" about her stately form, she was the embodiment of grace, culture, and poise, calm, peaceful and deliberate in all her actions. Though the disease that finally took her from us was making its inroads on her sweet life when she led our Auxiliary so ably in 1939-40, she assumed all her duties through the year and presided over our session meeting at Virginia Beach with all the ease and thoroughness of which she was always possessed, and told me many times of the pleasure both in the work and the delightful contacts she had with all the ladies with whom she worked. We shall miss her, yes, but we are grateful for the splendid life she lived and to us was given the honor to know her as friend. She died as she had lived, calm, and peaceful while sleeping. Without a struggle she slept on leaving us heartbroken, and sad and lonely, but she to awaken and be united with those whom she loved long since and lost a while.

Mrs. Holland was a descendant of a distinguished Eastern Shore of Virginia family, was born at Wilkins Beach on March 17, 1881, the daughter of the late Charles Frederick and Rebecca Addison Wilkins. She was happily married to Dr. G. W. Holland of Eastville and made her home at Stockley, the lovely ancestral home of the Hollands. To this union was born five children; three daughters and two sons, Mrs. Harry Denoon, Jr. of Nassawaddox; Mrs. Stuyvesant B. Wright of Norfolk; Mrs. Wm. L. Lawson, Jr., of Newport News; Julian Holland of Newport News; and Griffin W. Holland, Jr., of Eastville.

At all times Mrs. Holland proved herself patient and helpful as a country doctor's wife, both to her husband, and the county he served. She was prominent in the social, religious and civic life of the community. She was an active member of the Women's Club of the Eastern Shore, the Garden Club of the Eastern Shore, and a charter member of the U. D. C. and the Woman's Auxiliary to the Northampton-Accomac society. Indeed she was ever ready to serve when and where her services were needed. Her county paper paid her the following tribute:

"Mrs. Holland lived a gracious and noble life, befriending all who sought her companionship and giving guidance to her children and grandchildren

unobtrusively. Those who knew her and worked with her were struck by her gentleness, her loyalty, and her sympathetic understanding. She will be missed as a strong and active force in the community and her memory will be cherished as an able leader of her household, a giver of herself for her community, and a lovable companion to her family."

Truly, "none knew her but to love her, none named her but to praise."

MRS. HAWES CAMPBELL.

The Alexandria Medical Auxiliary

Held its January meeting on the 18th at the home of Mrs. Alfred Abramson.

Mrs. Nathan Schuman, President, conducted the business meeting which included a discussion by Mrs. H. A. Latane on a revision of the By-Laws and Constitution.

During the meeting it was announced that Mrs. Schuman, Mrs. W. Clyde West, Mrs. C. E. Arnette, and Mrs. Boyd R. Soyers, would form a delegation to represent the Auxiliary at the State Board meeting held in Richmond on January 27th.

Red Cross sewing activities are to be substituted for planned programs and the members decided to redirect their efforts to volunteer work.

Following the business meeting, Mrs. Leslie Lisle, chairman of the meeting, gave a review of the popular army book "See Here Private Hargrove".

MRS. C. E. ARNETTE,
State Press and Publicity Chairman.

Norfolk Auxiliary.

The January meeting of this Auxiliary was held on the 13th in the Library of the Medical Arts Building. This was in the form of a public relations meeting and members of various women's organizations in Norfolk were special guests.

Miss Mary Lou Green, Assistant Director of Nurses of the Norfolk General Hospital, gave a very interesting talk on the nursing aspects of the Kenny method of treating poliomyelitis.

Preceding the program, Mrs. Millard Savage, chairman of casualty centers, reported that an inventory had been taken of supplies in the office of Dr. Brownley Hodges, medical director of the office of civilian defense, and the equipping of stations would be completed whenever members can get more gasoline.

The next meeting of the Auxiliary will be a luncheon on March 15th.

MRS. BROCK D. JONES,
Chairman, Press and Publicity.

Book Announcements

Books received for review are promptly acknowledged in this column. In most cases, reviews will be published shortly after the acknowledgment of receipt. However, we assume no obligation in return for the courtesy of those sending us the same.

Essentials of Gynecology. By WILLARD R. COOKE, M.D., F.A.C.S., Professor and Head of the Department of Obstetrics and Gynecology, University of Texas. Philadelphia. J. B. Lippincott Company. 1943. xiii-474 pages. 197 illustrations, including 10 in color. Cloth. Price $6.50.

Diseases of the Breast. Diagnosis, Pathology, Treatment. By CHARLES F. GESCHICKTER, M.A., M.D., Lieut. Commander, Medical Corps, U. S. N. R.; Director of The Francis P. Garvan Cancer Research Laboratory; Pathologist, St. Agnes Hospital, Baltimore. With a Special Section on Treatment in Collaboration with Murray M. Copeland, A.B., M.D., F.A.C.S., Instructor in Surgery, Johns Hopkins Medical School; etc. Philadelphia. J. B. Lippincott Company. 1943. xxiii-829 pages. 593 illustrations. Cloth. Price $10.00.

The Sight Saver. By C. J. GERLING. Harvest House, New York. 1943. 202 pages. Cloth. Price $2.00.

How to Learn and Advance. By SAMUEL KAHN, M.D., Ph.D., Formerly on the Faculties of Georgetown and New York Universities; Chief Psychiatrist, U. S. Induction Boards for the States of New Jersey and Delaware; etc. xviii-196 pages. Cloth. Price $2.00.

Safe Deliverance. By FREDERICK C. IRVING, M. D. Boston: Houghton, Mifflin Company. pp. 308. 1942. Price, $3.00.

To those who are accustomed to the clarity and precision with which Dr. Irving discusses obstetrical problems, the first part of this book will be disappointing. He does not do himself justice. When, however, he begins to talk about other great Boston obstetricians, Walter Channing, the Storers and William Lambert Richardson, he warms up to his subject and gives us delightful pen pictures. These men stand out as actual persons as the author tells of the part they played in the development of the Boston Lying-In Hospital. Mrs. Higgins, the matron and superintendent of the hospital for forty-one years, is also a real person.

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Dr. Irving discusses the major obstetrical problems, anesthesia, sepsis, eclampsia, obstetrical forceps, cesarean section, abortion, avitaminosis, placenta previa, authoritatively, historically, and particularly how the Boston Lying-In Hospital has dealt with them through the years. His chapters upon epidemic puerperal fever are especially interesting. They speak volumes for Boston conservatism. In 1843 Oliver Wendell Holmes proved conclusively the contagiousness of puerperal fever and laid down rules to be followed to prevent the doctor or nurse from carrying the contagion from patient to patient. Another Bostonian, the younger Storer, actually used rubber gloves in operating, but for the purpose of protecting himself against being infected by the patient. Yet in 1883, forty years after Holmes' essay, the Boston Lying-In Hospital was having epidemics of childbed fever. Not until the cause of the disease was discovered and Breisky in Prague and Tarnier in Paris had developed an antiseptic technic, did they take adequate means of preventing the disease in Boston.

This book should appeal to both lay and professional readers. In this day when there is so general an interest in obstetrics, it could well serve as a textbook for the layman, as to what's what in obstetrics.

The Mind and Its Disorders. By JAMES N. BRAWNER, M.D., Medical Superintendent, Brawner's Sanitarium, Smyrna, Ga. Walter W. Brown Publishing Company, Atlanta, Georgia. 1942. 228 pages. Cloth. Price $3.50.

This book is a classification, with brief descriptions and treatment, of the various mental disorders. As such, it is a definite contribution for often such of the laity as social workers are in need of a brief and clear explanation of the various psychoses. Unfortunately, the book is sadly handicapped by the author's meager knowledge of basic physiology and biochemistry, as illustrated by the following quotations:

P. 10 ". . . the final lines of discharge from the cerebellum are inhibitory in function. . . ."

P. 19 ". . . there is a chemical mediation of nerve impulses which causes the contraction of the muscles of the heart. . . ."

P. 40 ". . . every muscle and gland, even when the body is in a state of rest, is bombarded 10 times a second by electrical impulses. . . ."

The author speaks of patients who are chronically angry, without mention of the modern work on sham rage. Thyroxin is recommended (p. 70) although there is no adequate reason why the cheaper dried thyroid gland should not be used.

The reviewer is very dubious about the following statements: (p. 47) ". . . the praecox mongoloid . . . with legs crossed in Mongolian fashion, a habit characteristic of a remote Mongolian ancestor."; (p. 206) ". . . for a person to inherit from an ancestor desires and cravings which force him to commit crimes, and possibly murder. He is a 'black sheep' in a good family. No doubt the majority of thieves, hold-up men, bank robbers and safe-crackers belong to this class."

The author speaks very freely of toxins and toxemias resulting from nutritional deficiencies. Occasionally this may be true, as in thiamin deficiency, but in other cases the mere deficiency may produce the effects without necessity of postulating specific toxins. No mention of thiamin is made in the discussion of alcoholism besides the statement (p. 102): ". . . the proper vitamins and nourishment. . . ."

The author is apparently unaware of the photosensitization of the skin in pellagra, stating only that he has observed that patients do better in a darkened room. In addition the author's materia medica smacks of "old timey" medicine, replete with tincture of gelsemium, hypophosphites and others.

The idea of this book is good. Let us hope that these criticisms will not be true of the next edition.

R. J. M.

The Essentials of Emergency Treatment. Published by The Connecticut State Medical Journal, New Haven. 144 pages. Paper cover $1.00. Cloth $2.00.

This book, prepared under the auspices of the Connecticut State Medical Journal gives, in brief fashion, modern concepts of emergency treatment along with certain medical and surgical fundamentals on which such treatment is based. While its contents are quite applicable to problems arising in peace time practice, the book has been especially written with an eye to the needs that may arise as a result of enemy attacks on the home front. There are 19 chapters with the following titles: Introduction; The Organization and Function of the Emergency Medical Service in Connecticut; The Systemic Effect of Injury, Peripheral Circulatory Failure ("Shock"); Crush, Blast, and Anesthesia in War Emergencies; Wound Healing and Its Complications; Chemotherapy in War Wounds and Com-

pound Fractures; Blood and Blood Substitutes for Emergency Use; Emergency Field Treatment; Treatment of Wounds of Soft Tissue; Burns; Abdominal Injuries; The Treatment of Fractures; Wounds of the Thorax; Injuries of the Head, Spinal Cord and Peripheral Nerves; Injuries of the Genito-Urinary System; Injuries to the Face; Eye Injuries; Chemical Casualties; Mental Casualties.

This is an excellent book which the reviewer highly recommends to every physician, whether he be in private practice or in the armed forces.

H. B. H.

Microbes Which Help Or Destroy Us. By PAUL W. ALLEN, Ph.D., Professor of Bacteriology and Head of the Department University of Tennessee; D. FRANK HOLTMAN, Ph.D., Associate Professor of Bacteriology, University of Tennessee; and LOUISE ALLEN McBEE, M.S., Formerly Assistant in Bacteriology, University of Tennessee. St. Louis. The C. V. Mosby Company. 1941. 540 pages. With 102 text illustrations and 13 color plates. Cloth. Price $3.50.

Written for the "average layman" this book appears to be too comprehensive to be widely read. Occasional passages are subject to correction or clarification, such as p. 175 "95% of all cases of pneumonia are caused by some type or strain of the pneumococcus". No distinction is made here between lobar and bronchial pneumonia. On p. 275, speaking of rabies, the authors speak of the possibility of the etiological agent being "a protozoan organism" which is hardly acceptable with the knowledge we have available concerning this disease.

One wonders somewhat about the arrangement of chapters; chapters on virus diseases are interspersed with chapters on tularemia, scarlet fever, whooping cough and the like. It would seem advisable to have the material on virus diseases together.

J. DOUGLAS REID.

Human Pathology. By HOWARD T. KARSNER, M.D., Professor of Pathology, Western Reserve University, Cleveland, Ohio. Sixth Edition, Completely Revised and Reset. J. B. Lippincott Company. Philadelphia. 1942. xxiii-817 pages. 460 illustrations in black and white and 24 subjects in color on 16 plates. Cloth. Price $10.00.

This is the 6th edition of the standard text book of Pathology by Dr. Karsner, Professor of Pathology in the Western Reserve University. The appearance of six editions in 16 years is ample proof of its popularity and usefulness. The present edition contains several changes from the preceding edition which contribute to the usefulness of the book. The illustrations, particularly gross- and microphotographs, have been increased in number. There still remain a number of the original black and white drawings which are less than adequate by modern standards of medical illustration. A number of kymographic tracings are used in illustrating the discussions of pathological physiology. This is a commendable idea and should help to correlate Physiology and Pathology for the student.

The general plan of the text consists of a division into general pathology and special pathology. At the beginning of each major chapter there is a brief outline of the topics considered, while at the end of the chapter there is a fairly extensive bibliography arranged alphabetically by authors. The references are judiciously chosen and include both the classical papers on the subjects and the most recent contributions. Most of the references are in English and many could be read with profit by the student if time permitted. The critical evaluation of the literature on many controversial topics is excellent and should be stimulating to the student or practitioner who is not too perplexed by the lack of dogmatic statements. Dr. Karsner makes no attempt to "talk down" to the supposed level of the student. He quotes authorities for most of his statements and in cases where his personal experience is in disagreement with the authorities he states this fact.

References to recent work are well-chosen; the reviewer noted with particular interest the mention of the recent work of Schlesinger, Blumgart *et al* on myocardial infarction and that of Petersen on the relationship of climate, weather and disease. Many other citations of recent work could be mentioned. As seems inevitable with new editions, a few errors have crept in. For instance, color plate II shows two photomicrographs on which the labels obviously have been reversed. On the whole the book is a stimulating and scholarly one reflecting the broad experience and critical viewpoint of a "Pathologist's Pathologist". It can be recommended particularly to advanced students, interns, residents and physicians for critical discussions of fundamental subjects in pathology and medicine without unjustified dogmatism.

J. S. HOWE.

XUM

VIRGINIA MEDICAL MONTHLY

Official Publication of the Medical Society of Virginia

(Founded by Landon B. Edwards, M. D., April, 1874)

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Editorials

The Office of County Coroner in Virginia

SHOULD the office of county coroner in Virginia be replaced by some more effective agency for investigating deaths in the interests of public welfare? In the near future this question will be considered by a state legislative committee. The opinions of physicians will undoubtedly be sought in deciding a problem so obviously medical. It is quite possible that many doctors have given the matter so little thought that they would be reluctant to give an opinion in the present state of their knowledge.

The matter is of sufficient importance to deserve the careful consideration of all citizens and particularly that of the medical and legal professions. It is not generally appreciated that there occur in the Commonwealth of Virginia between 4,000 and 5,000 deaths each year that require expert medical investigation in the interests of justice and public health. Let us see why this is true.

Approximately 2,500 or 10 per cent of Virginia's annual total of 25,000 deaths result from unnatural causes. Most of these represent accidents of one kind or another. Some are suicides and some homicides. The necessity of investigating such deaths in order to determine their cause and the circumstances in which they occurred is obvious. The determination of criminal responsibility or liability for damages rests on the results of the coroner's investigation. In addition to these deaths known or suspected to have resulted from mechanical or chemical injury there occur approximately 2,000 deaths each year so unexpectedly or from causes so obscure that the preservation of public safety requires them to be the subject of routine inquiries. Many of them are disclosed to have resulted from natural causes. Of those that result from natural causes some are found to be due to clinically unrecognized transmissible disease, the postmortem recognition of which constitutes an important aid to the preservation of public health. Some are disclosed by postmortem investigation to have resulted from unsuspected mechanical or

chemical injury the recognition of which is essential to the administration of criminal or civil justice.

At present the laws of Virginia fail to provide a competent mechanism for investigating deaths in the interests of public welfare. The law relating to the appointment of coroners makes no provision for the selection or retention in office of professionally competent individuals. The rate at which coroners are remunerated is so low that the public would have no right to expect a competent physician to accept the office of coroner if by chance it were tendered to him. Even though these defects were corrected, the present law is so unwisely restrictive as to when and to what extent a death may be investigated that it is virtually impossible for coroners to render effective service. The present coroner system fails to provide a workable mechanism for securing pathological and toxicological consultation incident to the investigation of medico-legal deaths. Finally the coroner should be relieved of those various quasi-judicial and non-administrative functions for which the law now holds him responsible.

At this juncture, although the reader may agree that the present system is probably undesirable, he may wonder just how much difference it makes whether the coroner's office is good or bad. Inasmuch as there have been no recent scandals involving the office is there any reason for making a change so long as the present system is tolerable?

A particularly pernicious feature of the coroner system lies in the fact that the consequences of its inadequacy are rarely made public. Although it is certainly true that deaths by homicide frequently escape recognition in Virginia it is practically impossible to prove that such is the case. The justification for such an assumption lies in the fact that in communities such as Massachusetts, New York City, New Jersey, and Maryland where effective medical examiner systems are in operation many homicides are recognized as such only because a competent mechanism exists for their recognition. It is unbelievable that such cases would be properly investigated under the system now operating in Virginia. At present the murderer who takes care that his crime is not witnessed and that he does not leave external wounds on the body of his victim stands an excellent chance to escape suspicion. Another consequence of Virginia's coroner system is that it predisposes to the criminal prosecution of innocent persons and to the recovery of undeserved civil indemnification. Where deaths are competently investigated it is found that while in many instances the circumstances of death or the appearance of the body indicate fatal accident or assault, the death was actually due to natural causes. It is obviously difficult to obtain direct information regarding the number of innocent persons in Virginia who have been prosecuted, imprisoned or rendered liable for damages because of incompetent or incomplete investigation through the coroner's office. It is likely that the number is appallingly large.

In summary it may be said that the office of county coroner in Virginia is hopelessly ineffective and that the consequences of its inefficiency are far more serious than is commonly appreciated. Since no group is as well qualified to judge the danger of the situation as is the medical profession it behooves the physicians of Virginia to exert their powerful influence in behalf of remedial legislation.

ALAN R. MORITZ, M.D.*

*EDITOR'S NOTE: Dr. Moritz is the professor of legal medicine at Harvard Medical School; chairman of the American Medical Association's Committee to survey the relationship of law and medicine; and pathologist to the Department of Public Safety of the Commonwealth of Massachusetts. He is also editor of the *Journal of Industrial Hygiene and Toxicology*. He conducted, for the Rockefeller Foundation, a two-year study of medico-legal practice in various parts of the world. This brought him into intimate contact with legal medicine as viewed by a number of foreign countries.

Continuous Caudal Anesthesia in Obstetrics

HINGSON and EDWARDS (*Am. J. Surg.*, 57:459, 1942, *Anesth. and Analg.* 21:301, 1942, *J. A. M. A.*, 121:225, 1943) have taken a long step toward the ideal obstetric anesthesia. Before discussing their method let us briefly review the physiology of parturition and how this process is influenced by anesthetic agents. The dilatation of the cervix is effected by uterine contractions, familiarly known as first stage pains. The expulsion of the fetus is accomplished by second stage pains plus the contraction of the abdominal muscles, the diaphragm and even the auxillary respiratory muscles. The separation of the placenta is caused by uterine contractions. The expulsion of the afterbirth is brought about by uterine contractions plus the voluntary straining efforts of the patient with or without the aid of the accoucheur. These uterine contractions in civilized women are accompanied by pain, hence uterine contractions and pains are synonymous in obstetrical parlance. There is no substitute for pains in the first stage of labor. We can do much to shorten the second stage by artificial delivery, but we need the uterine contractions again in the third stage not only to cause the separation of the placenta and to help in its expulsion, but also to constrict the blood-vessels going to the placenta site so as to prevent a postpartum hemorrhage. This action must continue even after labor is complete or there will be serious hemorrhage.

Nor must the baby be lost sight of. During this time it is probably breathing amniotic fluid more or less regularly. Its oxygen is supplied from the mother's blood through the placenta. The fetal and maternal circulations are so closely associated with each other that whatever affects the mother is likely to affect the fetus. We know that fetal nervous tissue is more susceptible to morphine than mature nervous tissue, and it is probable that the same is true for various anesthetic agents. If the mother's respiration is depressed, you can expect the baby's to be so also. Likewise, asphyxia in the mother seriously affects the baby, damaging nerve tissue and also predisposing to the rupturing of intracranial blood-vessels. At birth the baby becomes an air-breathing animal, and nothing must interfere with that function either by intracranial damage or by unduly depressing the respiratory center.

The purpose of obstetric anesthesia is to block the pain sensations somewhere between the generative organs and the cortex of the cerebrum. The old-fashioned twilight sleep might be considered a subcortical nerve block. The patient had all her conditioned reflexes, and, in fact behaved as if she knew what was going on. If the dosage were correct, she was temporarily like a pithed frog in the laboratory. Unfortunately, it was hard to maintain the correct dosage. If too little of the drug were used, the pain sensations broke through the pharmacological barrage and reached the cortex. If too much were used, the force of the uterine contractions was diminished on the one hand, and the baby's respiratory center was depressed on the other hand. Furthermore, patients failed to react uniformly to the drugs. Some became excited and were hard to manage. Newer modifications such as substituting one of the barbiturates for the morphine and using a general anesthetic in the second stage of labor instead of depending on a large dose of scopolamin to control the second stage pains, have improved results, but none has proved perfect in all cases.

Subarachnoid block by means of spinal anesthesia has been used for operative deliveries with satisfaction. If the dosage is small (50 mgm. of procain) it is comparatively free from danger. The duration of the anesthesia is too short to use it for a first stage anesthetic. The anesthesia is too complete to hope for a spontaneous delivery. Rarely can the patient be made to "bear down" and so expel the baby. So far as we know, the continuous spinal anesthesia of Lemmon has not been used in obstetrics.

XUM

Epidural anesthesia at the second and third lumbar spine is theoretically safer than spinal. The negative pressure beneath the ligamentum flava is the guide to the space where the fluid is to be deposited. Being extradural, a larger dose is required, and it takes some fifteen minutes for the procain to take effect. As a safeguard against unwittingly injecting the procain subdurally, one should inject a small quantity (5 cc.) and wait five minutes. If there is no anesthesia, 25 to 30 cc. can be injected safely. The duration of the anesthesia is from thirty to forty minutes. It takes more time than a spinal anesthesia, but one is equally sure as to results. There is no risk of a drop in blood-pressure nor of a respiratory failure, nor is it followed by headache such as sometimes occurs after spinal anesthesia.

Caudal anesthesia is epidural anesthesia induced by injecting the drug into the caudal canal at the sacral-hiatus. The height in the epidural space to which the solution can be made to ascend depends on the amount used. Thirty to 40 cc. is all that is necessary in obstetrics. The disadvantage is that you have no sure guide as to when your needle is in the right place. Cases have been reported in which the sacrum was missed entirely and the needle was introduced into the baby's cranium. We have heard of another case in which the needle was introduced into the mother's rectum, the mistake being discovered when the operator made a rectal examination. Occasionally, the subdural space extends far down into the sacral canal so that it can be entered by a needle introduced at the sacral-hiatus. If the patient is on her side, spinal fluid will escape when the stylus is removed, but if the patient is in the knee-elbow position, such will not occur, as the sacrum is at the highest point of the cerebral spinal space. In the fatal case at Hopkins no spinal fluid could be aspirated with a syringe. We have had a similar experience, and had we not used the precaution recommended in epidural anesthesia, we also would have had a fatality. After 5 cc. of the solution had been injected, we had immediate and complete anesthesia. This is the real danger to all epidural anesthesia. The uncertainty of results is also a serious drawback to caudal anesthesia. Even the most experienced operators fail at times. When it works, and when it is timed properly, it is ideal for forceps delivery, repairs, and the conduct of the third stage of labor.

Finally the nerves to the vagina and the perineum can be blocked as they emerge from under the pubic arch and the perineum can be infiltrated with procain. We use this almost routinely, either in conjunction with a general anesthetic or without it when a general anesthetic is contra-indicated. It is adequate for episiotomies, low-forceps operations and spontaneous deliveries when used alone. When used along with general anesthetic, the general anesthetic can be stopped as soon as the presenting part begins to distend the vulva, so that the baby is less deeply anesthetized than it would have been had the general anesthesia been continued. The local anesthesia is adequate for the repairs, and the uterus stays more firmly contracted after the completion of the third stage.

Hingson and Edwards have adopted the continuous principle of Lemmon's spinal anesthesia to caudal nerve block, and in this way have eliminated most of the objections to caudal anesthesia. They start it early in labor when one has leisure to be sure of getting the needle into the epidural space of the caudal canal. The needle is left in place and the injections are repeated frequently enough to keep the anesthesia continuous. To overcome the danger of breaking off the needle, two techniques have been devised. Hingson and Edwards have perfected a special needle of nickloid steel with a small hub that fits into the furrow between the buttocks. To this is attached small non-compressible tubing. This minimizes the danger of breaking the needle off, an accident that has happened to other types of needles. The patient is allowed a certain

amount of freedom of motion. If she wants to turn on her back, the doctor or nurse protects the needle with his hand. Unfortunately, this needle is not on the market.

At the Mayo Clinic and at the University of Iowa they use a No. 5 ureteral catheter which is introduced into the sacral canal through a No. 13 gauge needle. When the catheter is in place, the needle is withdrawn and the metycaine or procain is injected through the catheter. The No. 13 needle causes more trauma at the site of the injection, and several of our patients have complained of it afterwards. One patient in turning back and forth dislodged the ureteral catheter from the sacral-canal until its tip was just under the skin. Another patient had a sacral-canal that was so narrow antero-posteriorly that a No. 13 gauge needle could not be introduced. Aside from the technical difficulties and the risk of inadvertently injecting the agent into the subarachnoid space, the method is physiologically perfect. There is no interference with uterine contractions. If anything, the first stage is shortened. The patient can be encouraged to bear down and so have an unaided delivery if she so desires. The baby's respiratory center is unaffected. The uterine tone is excellent; hence bleeding in the third stage and afterwards is less. It is applicable to all types of cases with the possible exception of placenta previa. It is especially indicated when the patient has toxemia and in premature deliveries.

Department of Clinical and Medical Education
of the
Medical Society of Virginia

Institute on Industrial Medicine.

In cooperation with the Committee on Industrial Health, arrangements have been made to conduct five one-day institutes on Industrial Medicine in the Tidewater area during the week of March 22. Meetings are being arranged at Newport News, Norfolk, Portsmouth, Suffolk, and Petersburg. These are to be held under the sponsorship of the following societies: Peninsula Academy of Medicine, Elizabeth City County Medical Society, Norfolk County Medical Society, Portsmouth Medical Association, Nansemond County Medical Society, and the Fourth District and Southside Virginia Medical Society.

The tentative program which is now being completed will be as follows:

Afternoon Program

INDUSTRIAL MEDICINE TODAY—Dr. C. V. Peterson, Secretary, Council on Industrial Health, American Medical Association (accepted).

COMPENSATION—Dr. H. U. Stephenson, Medical Advisor, Industrial Commission of Virginia (accepted).

TRAUMA-SHOCK AND BURNS—Dr. E. I. Evans, Associate Professor of Surgery, Medical College of Virginia (accepted), and Dr. M. J. Hoover, Fellow in Surgery, Medical College of Virginia.

INDUSTRIAL MEDICINE—Dr. W. L. Weaver, Medical Director, du Pont de Nemours Co., Ampthill Plant (invited).

TUBERCULOSIS PROGRAM IN INDUSTRY—

Dinner Program

WOMEN IN INDUSTRY—Dr. Milton Kronenberg, Director, Division of Industrial Hygiene, Illinois State Department of Health (invited).

Evening Program

DERMATOSIS—Dr. Louis Schwartz, Dermatologist, U. S. P. H. Service (invited).

CRUSHING WOUNDS OF THE FOOT— } One or the
NEW DRUGS IN TRAUMATIC SURGERY— } other by representative of the U. S. Navy Medical Corps.

There will be some minor changes in the program above to meet the conditions of each locality.

This or a similar institute is available to other component societies in Virginia. If a society wishes to arrange for an institute, they should communicate with Dr. Fred J. Wampler, Chairman, Committee on Industrial Health, Medical College of Virginia, or the Executive Secretary of this Department.

GEORGE B. ZEHMER,
Executive Secretary.

Societies

Accomack County Medical Society.

At the regular quarterly meeting of this Society in January, the following were elected officers for the year: President, Dr. C. E. Critcher, New Church; vice-president, Dr. O. R. Fletcher, Sanford; and secretary-treasurer, Dr. J. C. Doughty (re-elected), Onancock.

Norfolk County Medical Society.

Dr. Charles W. Wainwright, prominent internist of Baltimore, was the guest speaker before this society on the evening of February 15th, his subject being "Arthritis". Dr. A. Brownley Hodges and Dr. Lockburn B. Scott, both of Norfolk, are president and secretary of the society, respectively.

Richmond Academy of Medicine.

The regular meeting of the Academy on February the 9th was held under the presidency of Dr. A. S. Brinkley and an interesting program was presented as follows by several doctors connected with 45th General Hospital stationed at Camp Lee:

Introduction—J. Powell Williams, Lt.-Col., M.C.
Marching Feet—R. Campbell Manson, Capt., M.C.
March Fractures—George A. Duncan, Maj., M.C.
Psychiatry in the Army—Andrew D. Hart, Maj., M.C.
Neurological Complications of Injuries About the Face—James L. Thomson, Capt., M.C.
Cardiovascular Disease in the Army—M. Morris Pinckney, Maj., M.C.
Pilonidal Cysts—Guy W. Horsley, Maj., M.C.

Following the meeting, refreshments were served in the dining room.

The Virginia Peninsula Academy of Medicine,

The membership of which includes doctors of the counties in the peninsula between the James and York Rivers, has prepared interesting programs for its meetings which are held on third Mondays, monthly. Dr. W. A. Colton of the Veterans Administration Facility at Kecoughtan is president and Dr. Harvey G. Bland of Newport News secretary.

Warwick County Medical Society.

New officers of the Warwick County Medical Society for 1943 are Dr. Paul Hogg, President; Dr. Thomas Hunnicutt, Vice-President, and Dr. David Blechman, Secretary-Treasurer. All are of Newport News.

News

The Medical Society of Virginia to Meet Again in Roanoke.

Following the decision of the House of Delegates that there should be a meeting of the Society in 1943, it was voted that the selection of the place and dates should be left to the Council at its winter meeting. Owing to crowded conditions of hotels in the eastern section of the State, this body, at its recent meeting, named Roanoke as this year's convention city and the local doctors have consented to help in any way possible to make this a success. Headquarters will be at Hotel Roanoke, and the dates selected are October 25, 26 and 27.

American College of Surgeons.

A series of twenty War Sessions, beginning March 1, will be held throughout the United States under the sponsorship of the American College of Surgeons with the cooperation of other medical organizations and of the Federal medical services. Each session will consist of an all-day program from 9:00 A. M. to 10:00 P. M., including luncheon and dinner conferences. Speakers of national prominence will discuss new developments in military, civilian medical and hospital service. There will be no geographic restriction on attendance, but the session for Virginia, District of Columbia and Maryland will be held in Richmond, at John Marshall Hotel, on Friday, March the 19th. A list of the other sessions and places of meeting may be secured from the American College of Surgeons, 40 East Erie Street, Chicago.

Medical College of Virginia News.

Commencement exercises closing the one hundred fifth session will be held at The Mosque on March 20 at eight o'clock. Governor Colgate W. Darden will be the speaker. It is anticipated the graduat-

ing class will number one hundred fifty-two; 71 in medicine; 26 in dentistry; 18 in pharmacy; 37 in nursing. Dr. Samuel Chiles Mitchell, Professor of History, University of Richmond, will be awarded the honorary degree of doctor of letters at the exercises. Dr. Mitchell was president of the Medical College of Virginia the year the old University College of Medicine was consolidated with the Medical College of Virginia, 1913-14. The final exercises have been confined to one day this session.

The annual Stuart McGuire lectures were held February 25-26, with the postgraduate clinics on the 26th, the subject of the clinics being low back pain. Dr. Philip D. Wilson, Clinical Professor of Orthopedics, Columbia University, College of Physicians and Surgeons, gave the two McGuire lectures.

Dr. William Mann, director of the zoological park, Washington, D. C., on January 25 gave a lecture on poisonous reptiles, this being one lecture of the series on war medicine.

Dr. P. N. Pastore, professor of otology, rhinology, and laryngology, spoke to the Richmond Society of ear, nose, and throat physicians on "The Effect of Sudden Atmospheric Changes on the Ear" recently.

Dr. H. H. Ware, Jr., professor of obstetrics, attended the annual meeting of the American Association for Planned Parenthood in New York.

Dr. William B. Porter, professor of medicine, has been made a member of the Board of Directors of the American Heart Association.

Dr. Walter E. Vest and Dr. R. J. Wilkinson of Huntington, W. Va., were recent college visitors.

Dr. Lynn D. Abbott has been promoted to assistant professor of biochemistry and Dr. Tyler Haynes to professor of orthodontia for the year beginning July 1, 1943, college appointments being made on a fiscal year basis.

Dr. Claude L. Neale has been appointed an assistant professor of psychiatry to fill the vacancy of Dr. Patrick H. Drewry, Jr., who is now serving with the armed forces.

News from the University of Virginia, Department of Medicine.

Dr. Eugene R. Kellerberger of New York, representing the American Mission to Lepers, showed motion pictures of "An Agricultural Leper Colony in Africa" and of "African Sleeping Sickness" on January 15th.

On January 20th, Dr. James A. Waddell spoke at the James River Medical Society on the subject of "Hemorrhages in the Newborn".

A lecture on "Continuous Caudal Anesthesia in Obstetrics" was given by Dr. Waldo B. Edwards and Dr. Robert A. Hingson of the United States Public Health Service on February 8th.

Dr. Robert DuVal Jones, Jr.

Has taken offices at 300 Wainwright Building, Norfolk, where he will resume the practice of surgery after several months' absence due to illness.

West Virginia State Medical Association.

The 76th Annual Meeting of this Association will be held at the Daniel Boone Hotel, Charleston, May 17-18. Due to war conditions, the usual formal banquet and ball have been dispensed with, but full scientific programs will be presented during the two-day meeting.

Award for Research on Alcoholism.

An announcement of a $1,000 award for outstanding research on alcoholism during 1943 has been made by the Research Council on Problems of Alcohol. The research must contribute new knowledge in some branch of medicine, biology, or sociology, important to the understanding or prevention or treatment of alcoholism, and any scientist in the United States, Canada, or Latin America is eligible. Full information may be obtained from The Director, The Research Council on Problems of Alcohol, Pondfield Road West, Bronxville, New York.

"Doctors at War".

The American Medical Association and the National Broadcasting Company, in official cooperation with the United States Army Medical Department and the United States Navy Bureau of Medicine and Surgery, will present over the NBC hookup a radio drama entitled "Doctors at War". This began on December 26th at 5:00 P.M., E.W.T., and will be continued for twenty-six weeks, being broadcast on each Saturday at the same time.

Our Men Need Books.

The 1943 Victory Book Campaign has been undertaken at the request of the armed forces and has

been approved by the Office of War Information. Good books—popular and technical—are wanted for men in all branches of the service, for the education and enjoyment of the soldiers, sailors and marines. Each reader is asked to leave such books as he can give at his nearest collection center or public library.

Dr. Louis Perlin

Announces that he is now located at 2920 Park Avenue, Richmond, for the general practice of medicine.

The Virginia State Board of Medical Examiners

Will hold its next examinations in Richmond, March 24-27, and applications must be complete in the hands of the secretary, Dr. J. W. Preston of Roanoke, at least ten days in advance of examinations. The change from June to March for the Spring examinations has been made to meet the needs of those graduating from Virginia and other medical schools at a much earlier date this year than usual.

Connected With Red Cross Work in Virginia.

Announcement has been made of the appointment of John F. Busch, M.D., as Director of Medical and Health Service for the Eastern Area of the American Red Cross with headquarters in Alexandria. Virginia is included in this area. Dr. Busch, formerly a general practitioner in Spartanburg, S. C., came to the Red Cross work from the Georgia State Department of Public Health where, since 1937, he was associated with the Division of Tuberculosis Control.

Dr. Robert V. Funsten,

Professor of orthopedics at the University of Virginia, was guest speaker before the Augusta County Medical Association at its meeting early in February, his subject being the "Kenny Treatment".

Dr. William R. Weisiger,

Richmond, has been elected grand master of the Grand Lodge, Ancient Free and Accepted Masons of the Commonwealth of Virginia.

Dr. R. S. Griffith, Waynesboro, has been elected grand senior steward.

The American Board of Ophthalmology

Announces that its 1943 examinations will be held in New York City on June 4th and 5th, and in Chicago on October 8th and 9th. Candidates will be required to appear for examination on two successive days. Formal application blanks should be secured at once from Dr. John Green, secretary, 6830 Waterman Avenue, St. Louis, Mo.

"The Foundation Prize"

Of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons will be awarded again this year. This is an award of $150.00 and eligible contestants shall include only interns, residents, or graduate students in obstetrics, gynecology or abdominal surgery, and physicians with an M. D. degree who are actively practicing or teaching these subjects. Manuscripts must be presented under a nom-de-plume and be limited to 5,000 words and must be in the hands of the secretary before June 1st. Full information about this award may be obtained from James R. Bloss, M.D., Secretary, 418 Eleventh Street, Huntington, W. Va.

Married.

Dr. James Walter Choate, Jr., Salisbury, N. C., and Miss Margaret Imogean Thorn, Hattiesburg, Miss., February 17th. Dr. Choate is a graduate of the Medical College of Virginia, class of 1942, and is now serving his internship at the Hospital of St. Vincent de Paul in Norfolk.

Nutrition in War Time.

The following is the program of a Nutrition Symposium to be held in the Simon Baruch Auditorium, Egyptian Building, of the Medical College of Virginia on March 25, 26 and 27:

THURSDAY, MARCH 25

8:00 P. M.—Nutrition Plans of the State Department of Health—Dr. I. C. Riggin, Commissioner of Health, State of Virginia.

Introduced by Governor Colgate W. Darden, Jr.

Nutrition in a Changing World—Dr. W. H. Sebrell, National Institute of Health.

FRIDAY, MARCH 26

9:30 A. M.—Making Nutrition Vital—Dr. Lydia J. Roberts—University of Chicago.

Victory Gardens as Related to War Time Nutrition in Virginia—Mr. L. B. Dietrick, Chairman, State Victory Garden Committee—Virginia Polytechnic Institute.

2:00 P. M.—Rationing as It Affects Nutrition of the Public—Dr. V. P. Sydenstricker—University of Georgia.

Living Under Rationing—Washington O. P. A. Representative.

7:00 P. M.—Dinner meeting—Banquet—1943 Ration Style War Time Nutrition in England—Dr. V. P. Sydenstricker—University of Georgia.

SATURDAY, MARCH 27

9:30 A. M.—Panel Discussion

Teaching Nutrition Material to Elementary School Children—Dr. Lydia J. Roberts and Miss Bertlyn Bosley.

Discussion opened by:

Dr. W. T. Sanger, President Medical College of Virginia and Chairman, State Nutrition Committee.

Miss Janet Cameron—V.P.I. Food Nutrition Specialist.

Miss Eleanor Enright—Regional Nutritional Representative, Office of Defense Health and Welfar Services, FSA.

Dr. Sidney S. Negus, Professor of Biochemistry, Medical College of Virginia.

Mrs. Luna L. Willis, Executive Secretary, Virginia Nutrition Committee.

Miss Marguerite L. Pettee, Chief Nutritionist, Medical College of Virginia Clinics.

The Fifteenth Anniversary Number of the Hebrew Medical Journal,

A semi-annual, bi-lingual publication edited by Moses Einhorn, M.D., which appeared recently is dedicated to a symposium on Peripheral Vascular Diseases.

Contributors to the symposium are Dr. Leo Buerger who has written an editorial on "Peripheral Vascular Disease in Retrospect"; Dr. William Bierman, "Physical Therapy in Peripheral Vascular Disease"; Dr. Charles F. Bolduan, "Some Data on the Prevalance of Diseases of the Peripheral Vascular System"; Dr. William S. Collens, "Arteriosclerosis Obliterans"; Dr. Aaron Dubnove, "The Role of Vitamins in the Etiology and Treatment of Peripheral Vascular Diseases"; Dr. Charles Goodman, "Thrombo-Angiitis Obliterans and Typhus Fever"; Dr. David W. Kramer, "Gangrene of the Lower Extremeties: Consideration of and Differential Diagnosis"; Dr. Samuel Silbert, "Treatment of Thrombo-Angiitis Obliterans". In addition there are several sections covering a variety of related subjects, such as Medicine in the Bible and in the Talmud, analysis of medieval medical manuscripts, Palestine and health, etc.

All of the original articles appear both in English and in Hebrew. The address of the Journal is 983 Park Avenue, New York City.

Obituaries

Dr. Marshall John Payne,

Prominent and popular surgeon of Staunton, died of a heart attack on February the 11th. He was a native of Orange County and seventy-one years of age. Dr. Payne received his education at the University of Virginia and Jefferson Medical College, Philadelphia, graduating from the latter in 1893. After a short time he moved to Staunton, where he had since made his home. Dr. Payne became a member of the Medical Society of Virginia soon after entering the profession and had taken an active part in its work, having served as one of its councilors and a former vice-president. He was a past president of the Association of Surgeons of the Norfolk and Western and of the Chesapeake and Ohio Railways, and also of the Augusta County Medical Association and the Medical Society of the Valley of Virginia. In addition, he held membership in several national medical associations. Dr. Payne was one of the organizers and first president of the Staunton Rotary Club, a Shriner, and took an active part in the civic and religious life of his community. His wife and a son survive him.

Dr. J. Richard Williams,

Retired physician of Richmond, died February 18th. He was a native of this city and sixty-seven years of age. Dr. Williams graduated from the Medical College of Virginia in 1898 and joined the Medical Society of Virginia that year. He was for fifteen years a member of the adjunct faculty of the College and was a member of the Richmond Academy of Medicine. Two sisters survive him.

Dr. Saevy Highsmith

Of Fayetteville, N. C., died December the 8th as the result of heart disease. He was a graduate of the former University College of Medicine of Richmond in 1901, and had always taken an active part in the professional life of his state. He was formerly a co-owner of the Cumberland General Hospital and later on the staff of the Highsmith Hospital, where he died.